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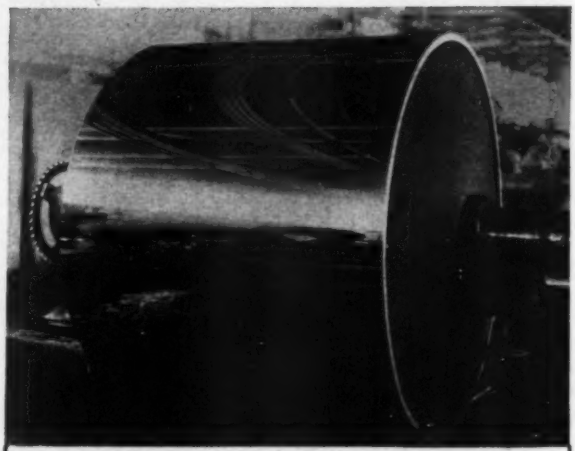

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Southland Mill Makes Newsprint *from Southern Pine*

Seen from the air (illustrated above) the first plant in the world to produce newsprint from Southern pine, looms as the beginning of a new era of industrial expansion for the South.

▶▶▶ INDUSTRIAL HISTORY was made in the piney woods of deep East Texas on January 17, when the nation's first commercial newsprint made from southern pine came off the mammoth paper machine at the new Southland Paper Mills, Inc., at Herty, three miles northeast of Lufkin, Texas. Six days later the *Lufkin Daily News* issued the first newspaper printed on the new product.

Launching of operations at the $6,000,000 plant ushers in a new era of industrial expansion for the South. Cotton for years the South's No. 1 crop, has a new competitor in southern pine, which in future years is destined to furnish southern farmers with a new source of cash income.

After a month of intensive technical research and checkups, the chemical laboratory on January 16 gave the signal that a complete paper run could be ventured. The motors were turned on and the tuning up process started.

At 5:15 a. m. on January 17, after a night of watchful waiting during which the motors were tuned for the initial run, a comparatively small group of officials witnessed the history-making event as they saw a gleaming white sheet of southern pine newsprint come off the big paper machine. In every way it was satisfactory. As evidence it was only necessary to examine the paper and take a look at the great rolls.

Executives present were: Ernest L. Kurth, Southland president; Albert Newcombe, treasurer; Tom A. Wark, general manager; and George Newcombe.

During the next few days portions of the sheet were tested in the laboratory to determine what minor adjustments were necessary. Then on the night of January 21 the first commercial roll was wound off on the rewinder.

On January 23 the *Lufkin News* published its daily paper on Roll No. 1 from the plant. Southland officials who watched the first issues come off the press expressed complete satisfaction with the initial printing and said the paper more than met the exacting standards of paper quality.

▶▶▶ Success of the project marks the attainment of a goal which had been envisioned by the late Dr. Charles Holmes Herty, famous Savannah, Georgia, chemist and scientist, who perfected the process of converting southern pine into newsprint. It was Dr. Herty, in whose memory the mill site was named, who first called attention of the nation to the South's great possibilities as a center of white paper production. It was through Dr. Herty's efforts and devotion to his southland, aided by the staunch support of southern publishers, that the new enterprise became a reality.

Completion of the mill is a dream come true for southern newspapermen, fulfilling years of planning and struggle to bring to concrete form the cherished hopes of the famous Georgia scientist.

Texas, Oklahoma, and Louisiana publishers, who had subscribed to taking their share of the mill's output, hurried to obtain early deliveries. Officials assured them first orders would be filled by February 1.

Most of the wood which goes into the manufacture of newsprint comes from within a radius of 20 miles of Herty. Lufkin is in the center of 10,000,000 acres of the slash pine which furnishes raw material for the plant, which will produce 150 tons daily or 50,000 tons a year.

On regular schedule the mill operates on a 24-hour-a-day basis, with four crews running the machine on six-hour shifts.

Dr. Charles C. Carpenter, who was Dr. Herty's assistant at Savannah and

Looking in on the groundwood mill at the new Southland plant, showing the grinders and the wood storage platform.

worked side by side with him during the time the new process was being perfected, is chief chemist at the Lufkin mill. Dr. Carpenter was associated with Dr. Herty for two years, and on the death of the latter was made director of the Herty laboratory in Savannah. After the initial runs made at the Southland plant, he said he was satisfied with the performance of the grinders, general mixture of groundwood and chemical pulp, the character of the paper produced, and with the water from the deep wells, drilled especially for the Southland mill.

The necessary semibleached sulphate pulp is obtained from the Champion Paper & Fibre Company, Houston, Texas. About 20 per cent of this chemical pulp is mixed with the mill's own groundwood.

The plant's entire production has been contracted for by southern newspapers for the next five years at rates paid Canadian mills to assure success of the new enterprise.

The plant was taken over as completed from the Merritt-Chapman & Scott Corporation on January 15, exactly one year and one day after ground was broken. Ideal weather and labor conditions prevailed throughout the period of construction.

Two months of preliminary grading, road building and layout work followed the ground-breaking ceremonies, and during this time temporary offices, supply buildings and auxiliary structures were erected. Excavations for building foundations were started on March 14, followed by the first concrete pourings on March 25, steel erections April 17, brick work May 1 and roofing early in June.

▶▶▶ All buildings are of reinforced concrete, brick and steel construction. Roof decks of the grinder room, paper mill and power plant are of Vermiculite concrete; while Wolmanized lumber is used for the roof decks of the finishing and shipping rooms as well as for the roof deck of the machine shop. The plant is so constructed that it can be expanded into a three-machine mill plus a chemical pulp mill, when the demand necessitates, at the least possible cost.

The main buildings are positioned in such a manner that a distance of about 800 feet is taken up by their length and, at their widest point, the distance occupied is about 280 feet. The largest building of the group houses the paper machine. This building is 70 feet wide and 360 feet long.

The Southland plant and yard occupies a little more than five acres of a 239-acre tract, and is served by two and one-half miles of side tracks in the mill yard, connecting with the Angelina & Neches Rivers Railroad, and one mile of improved hard-surfaced mill yard road ties into a newly paved highway leading into Lufkin.

Installation of equipment began last June and was completed in December, followed by the "warming up" period which began about the middle of the month. Test runs were made on boilers, turbines and grinders during the early part of January.

Besides the huge Pusey and Jones paper machine, the machinery in the East Texas mill includes six Great Northern grinders which are driven by three Electric Machinery Company motors. The grinders weigh nearly 500,000 pounds. Estimated daily production of groundwood by the mill totals about 120 tons, or 40,000 tons annually.

Three Foster-Wheeler boilers of 650 tons pressure furnish power to operate the mill machinery. Each produces 76,000 pounds of steam per hour. There are two G.-E. turbo-generators of 6,000 kilowatt capacity.

Wells near the mill site supply 8,000,000 to 10,000,000 gallons of water daily, an important factor in the manufacturing process as well as for fire protection. Fire protection at the Southland plant consists of outside water mains and automatic sprinkler

This view of the turbine room at the Southland plant, Lufkin, Texas, shows the two turbines and the boilers.

"Hey, scram offa my cake!"

...SAYS THE CHEF ON PAGE 49 TO THE PELICAN ON PAGE 50

"I'd like to," says the Pelican, eyeing the cake hungrily, "but I can't. I'm *show through*... from the next page, you know."

"Then pleez go back!" screams the Chef.

"I can't," says the Pelican, slicing himself some cake. "Why don't you speak to the paper manufacturer?"

"Oooooh, I am speechless, pig of a fowl!"

"But you *must* tell him about Krebs Pigments. And how they take *show through* out of even thinnest paper."

"Is it *opacity* you mean, that would fly away those dirty feet from my beautiful cake?"

"That's right," answered the Pelican, gulping some cake; "those Krebs Pigments will make the paper as clean, white and bright as this luscious cake—with sharp, clear printing on both sides."

"I pray this Krebs will remove you queek," moans the Chef.

"It's easy. Krebs will help with all the technical information needed," says the Pelican. "They've pigment colors for paper, too. You just write."

KREBS PIGMENT & COLOR CORP.

1007 Orange Street...Wilmington, Delaware

What a thrill it was to take from the press the first newspapers printed on Southern pine newsprint made in the new Southland mill. On January 23 the Lufkin Daily News made a trial run in its pressroom. Inspecting that issue of the Daily News are: (left to right) Jack C. McDermott and C. S. Boyles, Jr., publishers; E. L. Kurth, Southland's president; and Albert Newcombe, treasurer of the Southland Company.

system connected to a 125,000-gallon tank on a 125-foot high tower.

Timber areas supplying the raw material for the finished product are right at the back door of the Lufkin mill. The company itself owns 108,000 acres of pine-growing lands within 25 miles of the plant, and, in addition, there are 3,500,000 acres of pine lands containing nearly 20,000,000 cords of wood within a 50-mile radius of the plant.

The Southland mill also owns half interest in the Angelina & Neches Rivers Railroad, which connects with the Southern Pacific and Cotton Belt lines, on which the rolls of newsprint are shipped out to the consumers.

▶▶▶ Birth of the enterprise dates back to 1928, when southern industrialists, foremost among whom was E. L. Kurth, head of Southland, visualized the manufacture of paper as an industrial development. Faced with depleted spruce forests in the United States and dependent on Canadian and Scandinavian sources for newsprint, southern publishers had long recognized the need for an additional supply.

The initial thought, however, was for a kraft mill. Before the crash in 1929 plans were made for construction of such a plant in the South, but they were abandoned as the world depression hit the country. Next step in the active progress of work along the paper mill line was in 1933, when Mr. Kurth was president of the East Texas Chamber of Commerce. The following year the Southern Newspaper Publishers' Association, at that time headed by E. K. Gaylord, publisher of the *Daily Oklahoman* at Oklahoma City and now a director of Southland, adopted a resolution backing the proposed enterprise.

Meanwhile, Dr. Herty's experiments with pine pulps in Savannah were attracting nationwide attention. Mr. Kurth heard him speak at Beaumont, Texas, and his contention that the laboratory had proved the practicability of making newsprint from southern pine fired the enthusiasm of the Lufkin industrialist and well-known lumberman, and altered plans for building a kraft mill.

Texas publishers then promoted a drive which resulted in newspapers of the entire state and southwest contracting for the plant's output for five years. This action was taken at a meeting of prominent southwestern publishers in Dallas, Texas, on January 11, 1937, presided over by E. M. ("Ted") Dealey, vice president of the *Dallas News* and a Southland director.

With this impetus, the backers set about to finance the project. Approximately $1,500,000 was in sight as stockholder money. This, with timberlands adjacent to the site and invaluable to the project, was felt to be good collateral with which to secure a loan from the Reconstruction Finance Corporation.

A $3,425,000 loan was obtained in October, 1938, to be repaid over a period of ten years, starting one year after operations at the plant began.

The directors of Southland Paper Mills, Inc., held their initial meeting in Lufkin on January 9, 1939, when the Merritt-Chapman & Scott contract was officially approved and other plans perfected. T. A. Wark, who was general manager of the Watab Paper Company in Minnesota, was chosen as general manager of the new project, and Dr. Carpenter was employed as chief chemist.

Ground was broken on January 14, 1939, and dedication ceremonies honoring Dr. Herty and the late Francis Patrick Garvan, who also played a prominent role in success of the pine newsprint industry, were held in May.

The Southland Paper Mills, Inc., is now turning out southern pine newsprint and in years to come will be remembered as the backbone of a new southern industry. It has paved the way for more newsprint mills, which now seem inevitable in the face of the successful beginning of the Lufkin plant.

Southland officials are: E. L. Kurth, Lufkin, president; Arthur Temple, Texarkana, Texas, vice president; S. W. Henderson, Jr., Lufkin, secretary; Albert Newcombe, New York and Lufkin, treasurer; W. C. Trout of Lufkin, Paul Sanderson of Trinity, Texas, E. M. Dealey of Dallas, Texas, J. H. Kurth, Jr., of Houston, Texas,

THE FIRST PLANT FOR MAKING
COMMERCIAL NEWSPRINT PAPER
FROM SOUTHERN PINE
THIS INSTITUTION IS THE FRUIT OF THE
GENIUS AND DEVOTION OF TWO GREAT AMERICANS
FRANCIS PATRICK GARVAN AND CHARLES HOLMES HERTY

Memorial plaque of Dr. Herty and Francis Garvan which was dedicated and placed in the Southland mill on May 27 at the time of the formal dedication.

SOUTHLAND MILLS

Another Milestone for the Southern Paper Industry

and Another Construction Achievement

by

MERRITT-CHAPMAN & SCOTT CORPORATION

On March 14, 1939, actual construction of the Southland Mills was started by Merritt-Chapman & Scott Corporation.

On January 17, 1940, the first newsprint made from southern pine on a commercial basis, came off the paper machine — a crowning achievement to the courage of the organizers, to the skill of the management, to the designing genius of George F. Hardy, Consulting Engineer and to the enterprise of Merritt-Chapman & Scott Corporation.

ENGINEERING CONSTRUCTION DIVISION

MERRITT-CHAPMAN & SCOTT CORPORATION

17 BATTERY PLACE FOUNDED 1860 NEW YORK, N.Y.

Officials of Southland Paper Mills

Directors and officials of the new Southland Paper Mills, Inc.: Front row (left to right)—Arthur Temple, Texarkana, vice-president; E. L. Kurth, Lufkin, president; Albert Newcombe, New York, treasurer, and J. H. Kurth, Jr., Lufkin, director. Center row: Directors Paul T. Sanderson, Trinity; Alex Weisberg, Dallas, and W. C. Trout, Lufkin; A. G. Ready, resident engineer, and T. A. Wark, general manager. Back row: Directors E. K. Gaylord, Oklahoma City, and E. M. (Ted) Dealey, Dallas; S. W. Henderson, Jr., secretary; Lloyd Schenck, office manager, and C. B. Edwards, comptroller. E. L. Kurth, Temple, and Newcombe also serve on the board of directors in addition to their executive posts.

Alex F. Weisberg of Dallas, Texas, and E. K. Gaylord of Oklahoma City, directors; T. A. Wark, general manager; C. B. Edwards, comptroller; Dr. Charles C. Carpenter, chief chemist; Lloyd G. Schenck, office manager.

Equipment

The Southland mill was designed and constructed by engineers widely known and with particular genius in paper mill construction. George F. Hardy was consulting engineer, and construction was under the management of the Engineering Construction Division of Merritt-Chapman & Scott Corporation.

The list of companies that supplied all of the materials, machinery, etc., for a plant as large and well equipped as the Southland mill, would make a long, long list. However, the list of equipment given below includes specific items particularly identified with paper mills:

Allington and Curtis Mfg. Co., Saginaw, Mich. — *Bark and wood refuse handling system.*

Automatic Transportaton Co., Chicago (Agent, Lightner & Smith, New York City)—*Electric trucks.*

Bird Machine Co., South Walpole, Mass.—*Paper machine screens.*

Chicago Bridge and Iron Co., Chicago—*Tank and water tower.*

H. L. Crouse, Crouseville, Maine—*Wood barker and rosser.*

Cyclone Fence Co., Waukegan, Ill. —*Steel fence.*

DeZurik Shower Co., Sartell, Minn. —*Knot boring machine.*

Electric Machinery Mfg. Co., Minneapolis—*Synchronous grinder motors.*

Farrel-Birmingham Co., Inc., Ansonia, Conn.—*Roll grinder.*

Foster-Wheeler Corp., New York City—*Boilers.*

Goulds Pumps, Inc., Seneca Falls, N. Y.—*Centrifugal pumps.*

General Electric Co., Schenectady, N. Y.—*Turbo-generators, switchgear, and paper-machine drive.*

Hamblet Machine Co., Lawrence, Mass.—*Cutter and layboy.*

M. A. Hofft Co., Indianapolis, Ind. —*Bark burning furnace.*

Howe Scale Co., Rutland, Vt.—*Scales.*

Improved Paper Machinery Co., Nashua, N. H. — *Pulp screens and deckers.*

E. D. Jones and Sons Co., Pittsfield, Mass.—*Jordans.*

Jeffrey Mfg. Co., Columbus, Ohio —*Conveyor systems.*

Kalamazoo Tank and Silo Co., Kalamazoo, Mich.—*Tile stock chests.*

M. W. Kellogg Co., New York City —*High pressure steam and feed water piping.*

Layne-Texas Co., Houston, Texas—*Deep wells.*

Link-Belt Co., Chicago—*Paper roll elevator and lowerer.*

Manitowoc Engineering Works, Manitowoc, Wis.—*Barking drum.*

Midwest Fulton Machine Co., Dayton, Ohio—*Paper-machine dryer exhaust system.*

Montague Machine Co., Turners Falls, Mass.—*Wood pulp grinders.*

D. J. Murray Mfg. Co., Wausau, Wis. — *Roll heading machine and Howe Scale.*

Nash Engineering Co., South Norwalk, Conn.—*Vacuum pumps.*

Northern Engineering Works, Detroit, Mich.—*Cranes and hoists.*

Permutit Co., New York City—*Equipment for feed water treating.*

Pulp Bleaching Co., Wausau, Wis. —*Stock chest agitators.*

Pusey and Jones Corp., Wilmington, Del.—*Fourdrinier machine.*

Reliance Electric & Mfg. Co., Cleveland, Ohio—*Motors.*

Republic Flow Meters Co., Chicago —*Combustion control.*

J. O. Ross Engineering Co., New York City—*Machine hood, and machine-room ventilating system; grinder-room exhaust stacks.*

Swartwout Co., Cleveland, Ohio—*Feed water regulators.*

Trimbey Machine Works, Glens Falls, N. Y.—*Stock consistency regulating and metering system.*

Valley Iron Works Co., Appleton, Wis.—*Beaters.*

J. M. Voith Co., Inc., New York City—*Bull screens.*

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.—*Panels, breakers, safety switches, conduits, conduit fittings, couplings, wire and cables, lighting fixtures.*

Worthington Pump and Machinery Corp., Harrison, N. J.—*Feed water heater, air compressor unit, boiler feed pumps, vertical centrifugal pumps.*

◆

A COMPLIMENT TO SOUTHLAND FROM LUFKIN

The daily press usually does a very fine job of keeping in touch with any new local development, and particular attention generally is given to any enterprise that promises to build up the community and bring more revenue to the town. However, the local paper at Lufkin, Texas, has done not only that job, but it has paid the Southland Paper Mills, Inc., a compliment that is both elaborate and, some think, unparalleled.

The Lufkin Publishing Company made history in this respect when it published its Southern Newsprint and Texas Industrial Edition of the *Lufkin Daily News*, under date of January 14. This unusual special edition totaled 288 pages and was composed of five sections; one of 24 pages dealing with the paper mill, its background, and with paper manufacture. Another section presented a cross-section of Texas industrial and commercial develop-

. . . a history-making installation starts producing newsprint from Southern pine.

First Machine to be equipped with "Rapidrape" Wire Handling

The making of commercial newsprint from Southern pine—life-long dream of famed Dr. Charles Holmes Herty—became a reality in January when a new 234" Puseyjones Fourdrinier Machine began operation at Southland Paper Mills, Lufkin (Herty), Texas.

By selecting a high-speed Puseyjones Machine for this history-making installation, Southland Paper Mills secured all of the latest developments in the design and construction of paper-making machinery.

Here, for the first time, wire Handling is simplified by Puseyjones exclusive "Rapidrape" Method for installing Fourdrinier Wires. Other outstanding Puseyjones developments featured in this great Southern newsprint installation include (1) Duplex high-speed shake attachment providing maximum flexibility and versatility, (2) Pneumatic loading system on couch and main presses dispensing with weighted lever system, (3) Automatic constant tension attachment for dryer felts eliminating usual hanging weights, (4) Improved enclosed high-speed dryer gearing, (5) Improved simplified pressure lubrication, (6) 100% anti-friction bearings.

For faster, more profitable production, see that your next machine is equipped with "Rapidrape" Wire Handling and other exclusive Puseyjones improvements. Write us for full details.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-making Machinery

Wilmington, Delaware, U. S. A.

ment. All of the sections were given over to special material about Texas and the South, and, of course, an extensive history of the life and work of Dr. Charles H. Herty. The illustrations throughout the 288 pages were exceptionally fine, and the production ranked with the best magazine make-up.

This edition of the paper was not printed on newsprint from the new mill (See photograph of the first run on page 1126), but the fine editorial work, the art work, and the mechanical skill displayed in this special number should place it among the classics of the newspaper library.

Each of these special issues weighed 5 pounds and the run took one carload, or 20 tons, of newsprint.

◆

▶▶▶ TWO STEAMERS MAY BE PURCHASED by the Canadian International Paper Company. The United State Maritime Commission revealed that the company had proposed the purchase of the Steamer "San Lucas" from the Pacific-Atlantic Steamship Company. The "San Gabriel" is also being offered for sale, presumably to the same Canadian company.

◆

WATERFALLS MILL IS ACQUIRED BY AMERICAN GROUP

Waterfalls Paper Mills, Mechanic Falls, Maine, has been acquired by an American group. Negotiations which have been going on for several months were completed recently, resulting in the acquisition of holdings previously owned by the Norwegian pulp and paper company, Aktieselskapet Borregaard, one of the largest pulp and paper producers in Europe.

In a meeting of the new board of directors at Mechanic Falls, K. A. Hole was re-elected president and Daniel J. Walsh, Sr., was elected vice president. James G. Crump is treasurer and general manager of the company and Frederick E. Thorpe is assistant treasurer.

The company will continue operations of its plant at Mechanic Falls along similar lines as heretofore, making sulphite bonds, ledgers, text, cover, index, offset, papeterie and like grades of paper. The plant has a yearly capacity of 18,000 tons and employs about 300 people.

Continuing the company's policy, sales will be made to merchants and converters throughout the United States and, as previously, will be handled from the sales office at 21 East 40th Street, New York City.

This is how the Institute will look if remodeled as planned.

SOUTH PLANS MEMORIAL TO DOCTOR HERTY

▶▶▶ PATRIOTIC GEORGIANS, from the highest executives to the lowliest citizen, paid tribute during the week of January 14-20 to one of their most eminent sons—the late Dr. Charles Holmes Herty.

Proclaimed by Governor E. D. Rivers as "Dr. Herty Week," each day of that week witnessed tributes and honors to the memory of the scientist. Every agency, both state and private, co-operated in the state-wide observance—mindful of the service the doctor had rendered to his state and grateful for the influx of industrial development which followed and is still following in the wake of Dr. Herty's work.

One of the most permanent tributes to Dr. Herty are the two model demonstration forests which were dedicated to him on January 18. One of these forests is located near Eastman in Dodge County; the other is located near Cochran in Bleckley County. Other Herty forests are to be sponsored along public highways in all the counties of the slash pine belt. These forests will demonstrate modern, practical methods of growing pine trees as an agricultural crop and the effects of modern forest management. Nine such forests already have been made available.

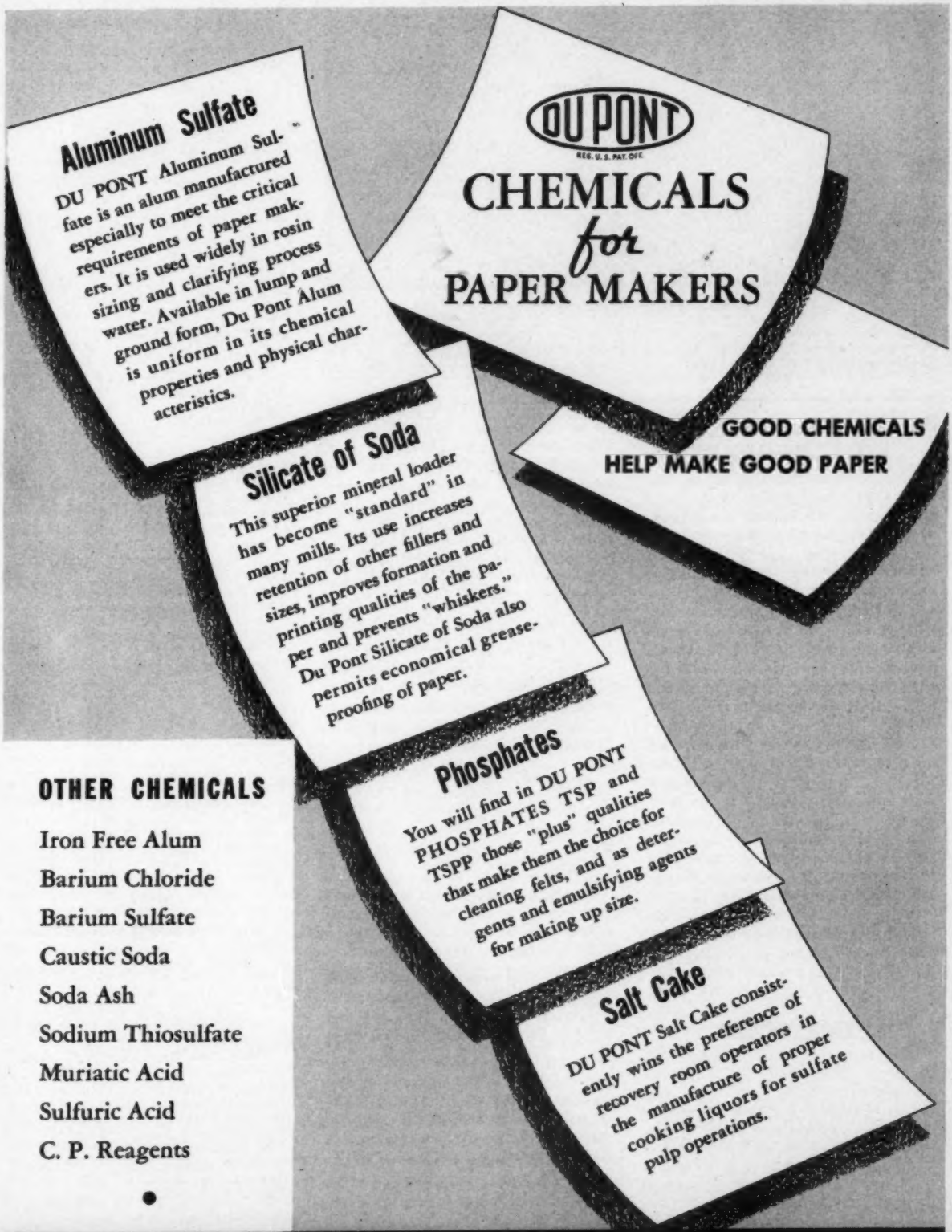
What will undoubtedly be the most permanent of all tributes, however, is the Herty Forest Institute, a projected institution for which funds are now being raised. This institute is to be located in Waycross, Georgia, where an option already has been made on a structure suitable for the planned activities.

The institute is to undertake two main programs. One of these will be a museum which will house permanent exhibits of the paper and pulp industry, naval stores industry, lumber industry, forestry, etc.; the other will concern itself with the cause of forestry and will include motion pictures, training of junior foresters, establishment of the Herty Forests, and the publication of a monthly bulletin. A trained forester and an assistant forester will be in charge of the program. The Herty Forestry Institute is sponsored by the Slash Pine Forestry Association of which Dr. Herty was chairman of the advisory committee and in which his interests were actively centered at the time of his passing in 1938.

It is estimated that the building can be acquired and paid for, remodeled, fully equipped and a three-year co-operative educational program financed for $50,000. Governor Rivers is honorary chairman of the Testimonial Fund and G. M. Bazemore is general chairman. The plan for the establishment of the Herty Forestry Institute has the backing of the Herty Foundation and the state forestry agencies, in addition to the Slash Pine Forestry Association and a representative group of Dr. Herty's friends, in government, business, science and industry.

◆

▶▶▶ WALLPAPER ORDERS of United Wall Paper Factories, Inc., increased 31 per cent in the last six months of 1939, over the same period of 1938.


Aluminum Sulfate
DU PONT Aluminum Sulfate is an alum manufactured especially to meet the critical requirements of paper makers. It is used widely in rosin sizing and clarifying process water. Available in lump and ground form, Du Pont Alum is uniform in its chemical properties and physical characteristics.
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GOOD CHEMICALS HELP MAKE GOOD PAPER
Silicate of Soda
This superior mineral loader has become "standard" in many mills. Its use increases retention of other fillers and sizes, improves formation and printing qualities of the paper and prevents "whiskers." Du Pont Silicate of Soda also permits economical grease-proofing of paper.
Phosphates
You will find in DU PONT PHOSPHATES TSP and TSPP those "plus" qualities that make them the choice for cleaning felts, and as detergents and emulsifying agents for making up size.
Salt Cake
DU PONT Salt Cake consistently wins the preference of recovery room operators in the manufacture of proper cooking liquors for sulfate pulp operations.
OTHER CHEMICALS
Iron Free Alum
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WILMINGTON · DELAWARE

A Big Coal Pile at KVP

Guess how much coal is in this KVP reserve bank. That's hardly a fair question so we'll tell you. According to inventory, when this picture was taken the coal pile contained over 30,000 tons of coal. A lot of coal? Yes, but it would only last the plant about 100 days. KVP takes no chances on running out of coal.

BOWATER'S NFD. MILL PROGRESSES

The Newfoundland mills of Bowater's Pulp and Paper Mills, Ltd., are expecting to operate at full capacity if the necessary shipping facilities are available and the increased business from the United States is maintained.

The company is building a 200-ton-a-day sulphite mill as part of an agreement made with the Newfoundland government. Construction work has already commenced on this project and it is expected that the mill will be completed by the end of 1940.

Although new markets have opened up since Bowater took over the Newfoundland property the company's main difficulty at present is the problem of shipping. This is particularly true in the exporting of log wood and for the distribution of newsprint and sulphite pulp. Although Bowater's owns its own ships, their carrying capacity is not sufficient to handle the large and growing volume of exports. The convoy system, particularly, has slowed down transportation.

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FINANCIAL

The first speculative demand for paper resulting from the European war appears to have spent itself, and the paper industry is now apparently on a sound production basis of approximately 90 per cent of capacity—a normally good profit basis on which the mills can operate with advantage to their stockholders.

Recent financial developments and financial statements follow:

A. P. W. Paper Company—Holders of more than 96 per cent of the outstanding twenty-five year convertible notes have agreed to a voluntary adjustment of the funded debt and have consented to accept interest payments on an income basis instead of at a fixed interest rate. The notes were issued for twenty-five years and carried 6 per cent. The agreement carries the payment proposal through to the maturity of the notes in 1955. A profit is reported for the period July 1 to November 18 of $42,638, as against a loss for the corresponding period of 1938 of $2,159.

Celotex Corporation—Net profits for the year ending October 31 were $741,756, as against $518,358 for the preceding fiscal year.

Dennison Manufacturing Company—Earnings for the ten months to October 31 were $226,837.

Johns-Manville Corporation—Ten per cent of the outstanding 7 per cent cumulative preferred stock will be called for redemption at $120 per share, plus all accumulated and unpaid dividends.

Marathon Paper Mills Company—Net profit for the fiscal year ending October 31 was $592,475, as against $267,136 for the preceding year.

Nashua Gummed & Coated Paper Company—Following a dividend of $1 per share on November 15, a dividend of $2 was declared for December.

Puget Sound Pulp & Timber Company—Net earnings for the quarter ending September 30 were $17,153, as against a net loss for the preceding quarter of $27,436 and a loss of $15,437 for the same quarter of 1938.

West Virginia Pulp & Paper Company—Net earnings for the fiscal year ending October 31 were $1,095,389, as against $260,353 for the preceding year.

Western Tablet & Stationery Corporation—Net earnings for the year ending October 31 were $472,154, as against $250,623 for the previous fiscal year.

Improving conditions in the industry are shown by the restoration of wage cuts made during previous years by various companies. Among those making such announcements are the S. D. Warren Company, which is now paying the peak rate previously distributed, half of the 10 per cent cut having been restored a year ago. Oxford Paper Company made a 5 per cent increase in wages. A 5 per cent increase restoring the balance of a 10 per cent cut was made by the West Virginia Pulp & Paper Company for its Mechanicsville, New York, mill.

New York Stock Exchange—Stocks

	Closing Prices Jan. 25, 1940	Dec. 31, 1939
A. P. W. Paper Co.	*2⅞–3	4
Celotex	10¼	10⅛
Same Preferred	*62–64	61
Certain-teed	6⅜	6⅜
Same Preferred	28⅜	35
Champion P. & F. Co.	23½	25
Same Preferred	*102–105¼	100
Container Corp.	16⅜	16⅜
Cont. Diamond	6⅞	7¼
Crown Zellerbach	16	16⅞
Same Preferred	90¾	89½
Dixie Vortex	12–12¾	11¾
Same "A"	35	34½
Flintkote	19¼	19⅜
Robert Gair	3¼	3⅜
Same Preferred	14⅞	15⅜
Gaylord Container	12½	13
International P. & P.	12⅞	14
Same Preferred	54½	56½
Kimberly-Clark	*34⅞–36	38
MacAndrews & Forbes	34½	34⅜
Masonite	38⅛	36¾
Mead Corp.	10½	11¼
Same Preferred	*60–67	.....
Paraffine Co.	42	40½
Same Preferred	101½	100
Rayonier	18⅞	18⅞
Same Preferred	28¾	28½
Scott Paper	46½	48¼
Same Preferred	*112¾–114	.....
Sutherland Paper	29	29¼
Union Bag & Paper	13⅞	13
United Paperboard	5	5
U. S. Gypsum	87	83¼
Same Preferred	*179–180½	173¼

New York Stock Exchange—Bonds

Celotex 4½%	88¾	87½
Certain-teed 5½%	77⅜	73½
Cham. P.&F.Co. 4¾%	105½	104¾
Container Corp. 5%	101¾	102¼
Inter. P. & P. Co. 5%	102	103
Same 6%	97	97⅛
Mead Corp.	105¼	105

New York Curb Exchange—Stocks

Am. Boxboard	6½	6⅞
Brown Co. Pfd.	23⅜	27⅜
Det. Pap. Prod.	1	1
Great Northern	*43–43⅜	44
Hummel Ross	*5⅛–5⅜	5½
Nat. Container	11½	10
St. Regis	3	3
Taggart	5¼	6
United Wall Paper	2⅛	1⅞

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▶▶▶ NEW LABORATORIES are being planned for the Powell River Co., Ltd., Powell, River, B. C. The new laboratory building will be 85 by 50 feet, of frame construction, and will house laboratories and offices for the research division of the company.

GOVERNMENT ISSUES DUMPING ORDER

For the first time since the Reciprocal Trade Agreement Act was passed in 1934, the Treasury Department has issued a dumping order for the collection of dumping duties. Oddly enough, the first such action included four rulings of dumping on paper goods, affecting ribbon fly catchers from Japan, Belgium, United Kingdom and Germany. An order was also issued on wool berets from France. It is worthy of notice that the dumping order on fly catchers from Belgium affects a commodity on which the duty rate was reduced in the Belgian Trade Agreement. Whether this action indicates a new policy as to enforcement of the Anti-Dumping Act remains to be seen. For five years no industry has been able to secure an antidumping order on any imported commodity and complaints by the Import Committee of the American Paper Industry against the dumping of foreign paper have not resulted in the imposition of dumping duties.

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NEW BAG PLANT BEING BUILT AT LONGVIEW

A modern paper bag manufacturing plant is now being constructed by the Longview Fiber Company, Longview, Washington. The new building will be located east of the main plant and will connect with the warehouse building just recently completed. It is of wood construction, one story high, 130 by 540 feet.

The present bag plant equipment will be moved into the new building as well as the plant offices, machine shop and paste-making facilities. The plant has a capacity of from 20 to 25 tons a day and is running at capacity. The Austin Company of Seattle is the contractor for the new construction.

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DR. HOWE URGES INSECT CONTROL

A protective service against pulpwood losses caused by insects is a necessary organization, according to Dr. C. D. Howe, dean of the forestry department at the University of Toronto. The doctor recently recommended such a service for every provincial government in Canada.

"As a result of the enormous losses of pulpwood by insect pests and their induced diseases and the likelihood that they may recur periodically," stated Dr. Howe, "the foresters are convinced that an insect protective service should be established by each provincial government, not as a separate service, however, but joined with the fire protection service.

"This would involve training fire rangers for the purpose. As in the case of fires, insect attackers should be nipped in the bud before they get out of control. The development of really effective forest fire protection is based on a thorough investigation of the inducting conditions and careful research into the basic causes, so an insect protective service, to be successful, would need a corps of trained specialists."

Dr. Howe pointed out that about 20 years ago an epidemic of the spruce budworm destroyed many million cords of potential pulpwood in eastern Canada and that the spruce sawfly is now assuming epidemic proportions in lower Quebec and the Maritime provinces. The doctor warned that these pests are spreading rapidly.

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The Thilmany Pulp and Paper Company has renovated the old Union Bag and Paper Company mill at Kaukauna, Wis., to fit its needs. Equipment is now being installed for the conversion of paper. A portion of the building is being used as a warehouse. The mill is located up the canal and west of the main office. (When the picture was taken, the name was being painted and was not finished.)

GAIR INSTALLS NEW GENERATOR

A new high pressure, 450-pound steam generator is now being installed in the Robert Gair Company mill, Piermont, New York. The generator has a capacity of 150,000 pounds of steam per hour and will operate in conjunction with a new 2,000 kw. topping turbine exhausting against 150 pounds gauge pressure. This new turbine will drive, through a reduction gear, a 1,000 kw. a-c. generator and a 1,000 kw. d-c. generator.

The boiler will also supply steam to an existing 2,000 kw. a-c. bleeder condensing turbine driving a 2,000 kw. a-c. generator. The new steam generator and turbine will be housed in a new power plant structure.

GOVT. HALTS PROSECUTION IN KRAFT CASES

The Administration has decided against further appeals of the kraft paper valuation cases in which it has been contended that the proper dutiable home market value of the paper is about one cent per pound higher than the actual export selling price. The importers argue that the Swedish sellers have established such a control over the home market that there is no "freely offered" value on which duty can be collected and that the proper dutiable value is the lower export value. It is because of this claim that the Import Committee of the American Paper Industry is urging that legislation be enacted to prevent such practices by foreign producers by which they avoid the plain intent of the tariff law. If the Government follows the same procedure in several hundred other pending cases, importers of kraft paper for nine years past will recover about $750,000 in duties which they were required to pay before they could begin suit for recovery.

A further result will be the admission of future shipments of Scandinavian kraft at about $4 per ton less than has been paid hitherto. Even without this reduction the actual selling price of the paper before the outbreak of war was below the American cost of production.

There is nothing to indicate what considerations of trade or international policy were involved, or to what extent they may have been instrumental, if at all, in the present decision of the Government to cease further efforts to prosecute these cases.

MICHIGAN MILL TESTS NEW WASTE DISPOSAL PLANT

▸▸▸ THE MONROE PAPER PRODUCTS COMPANY, Monroe, Michigan, is pioneering among paper board mills in the disposal treatment of industrial wastes. It is claimed to be the first mill in Michigan to install such a plant and the outcome of its experiment is being watched closely by the entire paper-making industry, professors of the University of Michigan, and the Michigan State Streams Control Commission.

The disposal plant consists of two large clarifiers, each 50 by 50 feet and 12 feet deep; two flocculators; two turbo mixers; and two sludge pumps. The various units can be operated independently or together, and the two operations are interchangeable. The turbo mixers and sludge pumps are housed while the clarifiers and flocculators are exposed to the weather.

The industrial waste, after going through the board-making process, enters the turbo mixer, where certain chemicals are added. One precipitates color from the mixture. The waste then goes into the flocculator and on to the clarifier, which has a fringe of weirs on the four sides through which the effluent passes off and is dumped into the River Raisin. Sludge pumps then pump the residue back into the board-making process.

The disposal unit has been in operation since July 31, 1939, and Thomas F. Sullivan, first vice president and general manager, says that figures indicate the equipment will meet all expectations. The cost, exclusive of the building, which was constructed in part to add needed plant space, was between $25,000 and $30,000.

Construction of the industrial waste treatment plant is the outcome of long negotiations between the city of Monroe, the State Streams Control Commission and the paper industry in Monroe represented by the Consolidated Paper Company, the River Raisin Paper Company and the Monroe Paper Products Company. Over a period of years the city has made continuous efforts to clean up and purify the River Raisin, which courses through the center of the city and into Lake Erie. The city's sanitary, as well as storm and industrial wastage, was formerly dumped into the river and caused a pollution nuisance which came to the attention of state health authorities.

The city, starting with CWA and later PWA and WPA funds, has in the last six years constructed a modern sewage treatment plant, built six dams across the River Raisin to eliminate flood damage caused by ice jams by creating and maintaining a minimum depth, built riprap throughout the length of the river in the city and has constructed interceptor sewers paralleling the river banks to carry all sewage to the treatment plant. Considerable new sewers have been built and sanitary and storm systems have, for the most part, been separated.

With the sanitary problem disposed of, the industrial waste problem continued. The Monroe Paper Products Company, through its position above the city, was the first to take action. The other two companies are below the city and dump their industrial waste into the River Raisin below the city's sewage treatment plant.

Realizing that ultimately it would probably be necessary for the paper companies to either clarify their waste or to cease dumping it into the river, the Monroe Paper Products Company asked the city to determine the river standard for waters dumped into it. This the city did through consultation with the State Streams Control Commission, which was primarily interested because of the pollution aspect.

The standard is stated as follows: "The concentration of mill wastes shall not be greater than .35 pounds per 1000 gallons of suspended solids on a dry basis. The total solids discharged into the river shall not be greater than seven pounds per ton of product and the apparent color shall not be greater than 125 and the turbidity shall not be greater than 125."

These standards are now being met by the Monroe Paper Products plant according to tests made by the city sewage department.

Both Consolidated and River Raisin Paper Companies have made studies toward a solution of their problem and are watching the result of the pioneering work done by the Monroe Paper Products Company. Manager Sullivan states that a full year's operation will be necessary to make a thorough report.

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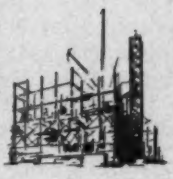
NEW PRICE POLICY AT BROWN CO.

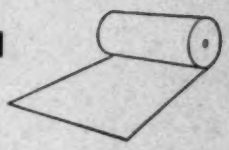
A new policy in regard to mill prices has been effected by the Brown Company. The company claims that the policy will give its distributors a sound basis for accepting orders for future delivery in spite of the present abnormal times.

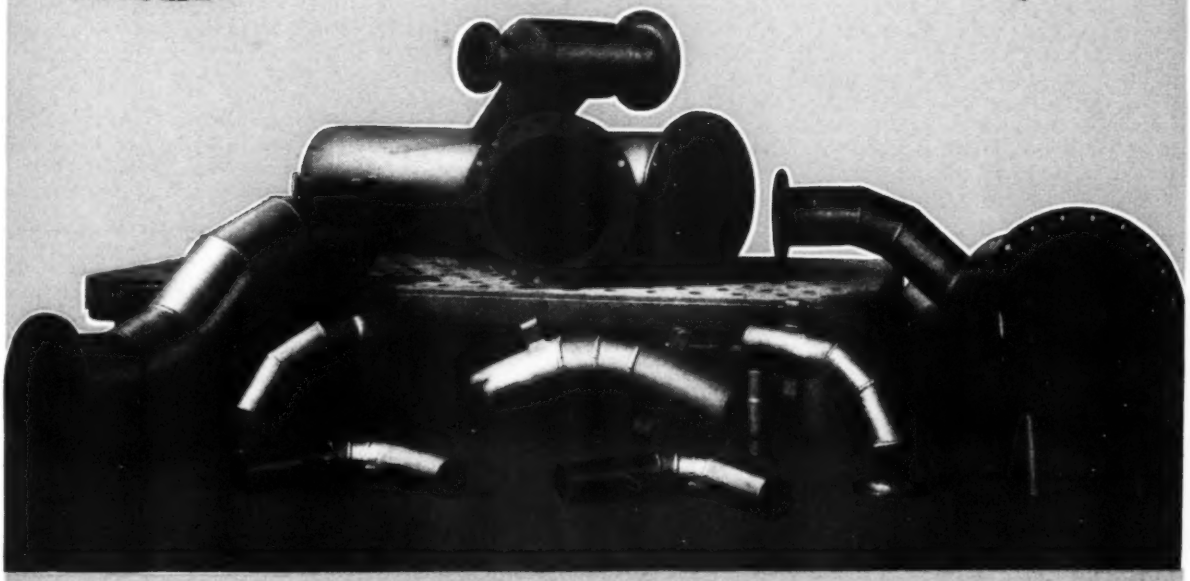
The Brown Company is departing from the prevalent policy of "prices subject to change without notice" and effective last January wholesale prices of the company's complete line of Nibroc Aqualized Towels was put on a three-month, or quarterly, basis. The only departure from this policy will be when and if changed conditions warrant price reductions. Firm prices to distributors have been established for all shipments from the mill during January, February, and March. Prices for the second quarter will be announced on or about March 15.

Paper Manufacturer Cuts Time

BETWEEN INVESTMENT AND RETURN







To construct and weld these complicated parts of power and process lines *in the field* would have been a long, arduous job.

This paper manufacturer wanted *results*, so his engineers turned to Grinnell for accurate sub-assemblies, prefabricated to their specifications, as soon as the job was started. When the time came for their use, these units were ready to slip into place and weld.

Advanced plant facilities, strategically located for service to the nation . . . piping experts who can interpret your plans in terms of latest developments . . . qualified welders, whose work passes insurance tests before it leaves the plant . . . these are some of the benefits you gain when you say, "Give the plans to Grinnell." Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch offices in principal cities of the United States and Canada.

PREFABRICATION BY GRINNELL

WHENEVER PIPING IS INVOLVED

LABORATORY AT CAMAS DEDICATED WITH OPEN HOUSE

Completion of the Crown Zellerbach Corporation's new central laboratory building at Camas, Washington, was the occasion in mid-December of a two-day open house at the Crown Willamette Paper Company plant, where the new structure is located. Over 4,000 persons responded to the paper company's invitation to see the gigantic plant in full operation.

An unprecedented occasion, the open house was a fitting dedication of a research center believed to be unique in the paper industry. The laboratory serves the far-flung operations of the Crown Zellerbach Corporation, the sixteen divisions of which comprise the second largest paper enterprise in the western hemisphere. The 44 by 120 structure of brick veneer houses three laboratories—general research, biological and waxing paper—besides a humidity room, two cold rooms, a fine instrument room, a library, and offices.

A feature of the biological laboratory is a sterile room for growing cultures and counting bacteria under antiseptic conditions of atmosphere. In the humidity room, which is kept at standard temperature and standard humidity, fluorescent lighting is used because it generates no heat to upset the perfect temperatures and humidity control. This room contains numerous precision instruments for testing papers. The waxing papers laboratory has a miniature waxing machine modeled after equipment used by the Western Waxed Paper Company, a C-Z subsidiary. One cold room can be dropped to 10 below zero for experiments with frozen foods and the other can be reduced to 25 above to duplicate conditions in refrigerated cars and boats.

Translucent glass brick panels encircling the building provide illumination for all rooms, the three laboratories in corner locations getting the benefit of daylight from two sides. Two-toned sound-absorbing fiberboard is used for walls and ceilings in hallways and offices and patterned asphaltic tile for the floors. The laboratories are finished in gray and ivory.

At the open-house, ninety-four guides escorted the visitors through the new building and over the 50 acres of plant, showing them many departments never before open to the public. Visitors came from many Pacific northwest cities, swelling the year's total number of mill guests to over 12,000, a new record.

W. H. Barber is technical director of the new laboratory and has a staff of thirteen. Their research activities cover the whole field of papermaking.

CANADIAN MILL MEN ASK FOR NO NEW MILLS

Prohibition of the construction of new mills in Canada until existing plants have reached maximum production, was urged recently by a deputation of pulp and paper workers from northern Ontario. The workers were assured by Peter Heenan, Minister of Lands and Forests, that full investigation will be made.

The deputation, representing several northern Ontario centers, pleaded that they have been working on short time for many months and that their reserve resources were exhausted. Furthermore, since they have part time employment, they get no public relief. The group stated that the mills had been working part time for two years and asked that a more even allocation be made among existing mills. Mr. Heenan stated that the government is encouraging new sulphite mills but has no definite policy towards newsprint.

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STEVENS PAPER PLANS TO BUY HAMPSHIRE CO.

Negotiations are now under way for the purchase of the Hampshire Paper Company property in South Hadley Falls, Massachusetts, by the Stevens Paper Company of Windsor, Connecticut. The Hampshire mill has been idle for several years but will reopen when the sale is completed.

The Stevens Paper Company's headquarters are in Windsor where the firm operates a large board mill. The company also owns and runs two paper mills in Westfield, Massachusetts, which were formerly the property of the Crane Paper Company. Electrical insulating paper and condenser tissue paper are manufactured at the Westfield mills. The General Electric Company is the principal outlet for these mills' products.

It is said that several brands of specialty papers will be manufactured at the Hampshire plant, presumably for the electrical trade. There are two machines at this mill and plans are to replace the older one with a new 86-inch machine.

The Hampshire mill closed in 1931 although the Old Hampshire bond fine writing paper has been turned out in the Carew Manufacturing Company, South Hadley Falls, Massachusetts. The Carew and Hampshire mills have long been closely associated.

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COLOR COUNCIL TO MEET DURING PAPER WEEK

Paper industry technicians will be interested in attending the initial session of the Inter-Society Color Council's ninth annual meeting to be held during Paper Week February 21-24 at the Roosevelt Hotel, New York City.

The meeting, to be held jointly with the Optical Society of America and the American Physical Society, will include on the first day, a technical session on spectrophotometry in the pulp and paper industry. This session, which is sponsored by the Technical Association of the Pulp and Paper Industry, is to be held in the Hendrick Hudson Room of the Roosevelt Hotel, February 21 at 2 P. M. It will include such speakers as K. S. Gibson of the National Bureau of Standards; J. A. Van den Akker, Institute of Paper Chemistry; R. S. Hatch, Weyerhaeuser Timber Company; R. N. Griesheimer, Mead Corporation; Myrl N. Davis, Kimberly-Clark Corporation and William J. Foote of the Consolidated Water Power and Paper Company. The session will be presided over by John L. Parsons of the Hammermill Paper Company.

The session will be divided into two parts: (1) the survey of instruments and (2) the use of instruments. In the former unit there will be three papers which will cover spectrophotometers, abridged spectrophotometers and survey of instruments in the pulp and paper industry. In the second part of the session there will be papers on the use of instruments in pulp, in beater furnish, in uncoated paper and in coated paper.

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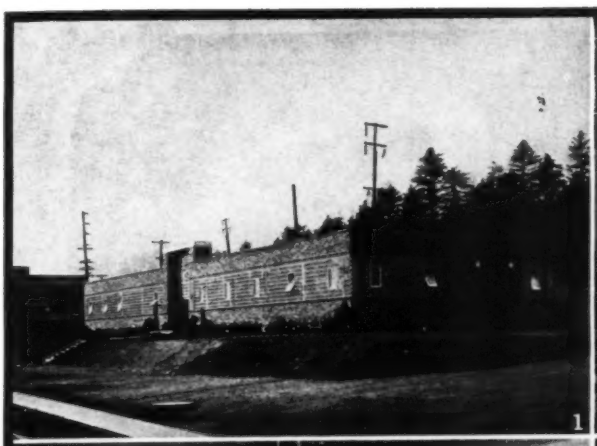
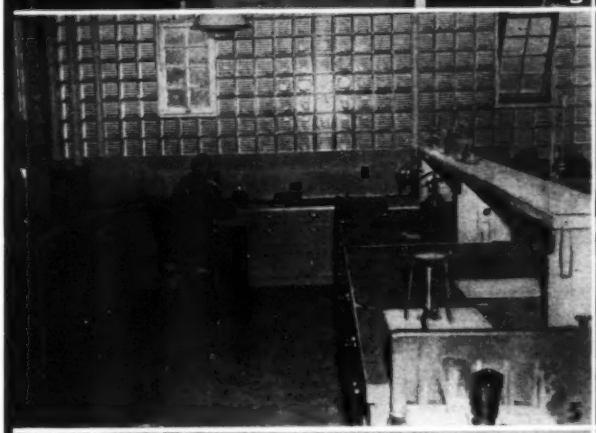
CAN. MILLS RESPOND TO 1ST WAR LOAN

The Canadian pulp and paper industry has responded well to Canada's First War Loan, as revealed by some first reports.

Evidence is shown in the listing of the Brompton Pulp and Paper Company which subscribed for $125,000; Spruce Falls Power and Paper Company, $100,000; Eddy Match Company, $250,000; and Howard Smith Paper Mills, Ltd., $200,000. Other pulp and paper companies are expected to follow suit. The bonds were issued to buy materials for Canada's army and are payable at 3¼ per cent.





C-Z Laboratory at Camas

Fig. 1—Exterior view of the laboratory building seen from the mill. . . . Fig. 2—Fine instruments room. . . . Fig. 3—Waxing papers laboratory. . . . Fig. 4—Staff of the central technical department. (left to right) Seated—J. B. Hall, R. G. Mapley, W. F. Holser, B. Weidenbaum, W. R. Barber, director, Jas. B. Hyde, Louise Barles and Mrs. Leona Van Arnam. Standing—Herbert Prelinger, D. L. Shinn, T. L. Yocum, C. S. Funk, and I. B. Brown. (Howard Graham of the staff is not shown.) . . . Fig. 5—General research laboratory. . . . Fig. 6—Close up in general research laboratory. . . . Fig. 7—Some of the precision instruments in the humidity room.

ANOTHER MILL FOR SOUTH IF RFC MAKES LOAN

Another newsprint mill for the South was indicated by the filing of a formal registration statement with the SEC by the Tennessee Valley Paper Mills, Inc., of Knoxville, Tennessee. The statement covered an issue of $2,392,500 in 5 per cent debentures and common stock of no par value, and included a statement that it had applied for a loan of $3,420,000 from the Reconstruction Finance Corporation from whom "definite indication" was given that the loan would be granted when the balance of the financing was assured. The securities are to be sold in units of one share of common stock and one $100 debenture.

The new company announced its intention of building a mill near Savannah, Tennessee, to make newsprint from southern pine, using this wood for both sulphite and groundwood pulp. The officers of the corporation are listed as Gordon Browning of Huntingdon, Tennessee, president; R. M. Davenport, Washington, D. C., vice president, and S. W. Duggan, Knoxville, secretary-treasurer.

The actual filing of a registration statement with the Securities and Exchange Commission places this project somewhat in advance of other previous announcements of contemplated Southern pine newsprint mills. In some cases at least, however, the preliminary announcements have not been followed up by actual constructive developments, owing to the inability of the promoters to secure the independent financing which must be provided before loans can be secured from the RFC.

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NEW ENGLAND PULP NEWS

There was a gap during the middle weeks of January when pulp arrivals slumped, but a pickup occurred and in the week of February 3 some 10,000 tons were discharged at Portland, Maine, with similar amounts scheduled for Boston and ports to the south.

Pulp sellers report their principals abroad are unwilling to commit themselves in the matter of price beyond a short near-by delivery term and even that must be subject to fluctuations in the ocean freights and war-risk insurance rates. Yet this factor and the decreasing number of ships plying between the west and east coast, whence comes large tonnages of pulp, has not stirred up the excitement in purchasing offices that many expected. On February 15, a 50-cents-per-ton increase in the intercoastal pulp freight is effective. The conference lines are raising rates on all commodities. Scarcely a week goes by but news comes to hand of one or more ships being sold out of this service to foreign registry or withdrawn for more lucrative routes.

A New England board mill bought kraft at $43 five weeks ago. Later it couldn't be had at $48 and by February 1, $50-$55 dock was being quoted widely. Unbleached sulphite spot offerings were more numerous, but all of them were strong at $55 and upwards, with Mitscherlich and easy bleaching quoted at $58-$62, although no buyer admits paying these figures. Unbleached is said to be stronger than bleached. Domestic producers whose first quarter bleached sulphite contracts at $60 sound low to them against a background of spot $55-$60 quotations, doubt whether much spot pulp has sold at $70 as quoted. One producer of a fine domestic pulp reports that no consumer has offered to pay that much.

Meantime the potential scarcity and high prices has brought back into operation three idle New England pulp mills, two in sulphite and one in groundwood, and a fourth kraft mill is to reopen shortly, it is rumored. All interests agree, however, that since January 1 demand has been very light, about on a ratio with the diminished new orders for paper.

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Has Anyone a Copy?

An SOS is being broadcast for a copy of the 1924 edition of the PAPER AND PULP MILL CATALOGUE. If anyone has a copy of this book, please communicate with Harry E. Weston, Editor, Paper and Pulp Mill Catalogue, 59 East Van Buren Street, Chicago.

CONSOLIDATED FACILITATES COAL SHIPPING

Increased use of the new harbor facilities at Monroe, Michigan, is anticipated by the Consolidated Paper Company, of Monroe, in the annual letter of President H. Lee Rauch as submitted to the stockholders January 22. The company brought in ten cargoes of coal, totaling 85,000 tons, during the past summer during which it completed its contribution of $75,000 toward the deepening and widening of the River Raisin at Monroe to make a turning basin and develop it once more as a Lake Erie port. President Rauch said that the savings on the rail-water shipments of coal alone would justify the expenditure which has been made in six annual installments.

During the past summer a large steel warehouse and wharf has been constructed by the Monroe port commission, rail lines run to the harbor and other facilities completed to handle inbound and outbound package freight goods. The Consolidated Paper Company plans to use these facilities widely during the coming year to still further reduce costs of both raw and finished materials.

President Rauch announced the continuation for the fifteenth year of the company's group insurance plan for employees. A total of 1767 employees are now covered, the total policies amounting to $3,099,500. Ten claims were paid during the year totaling $20,250 to bring the total claims paid to $215,915. During the year hospitalization and surgical insurance was added with 86 claims paid during the last seven months totaling $5,376.50.

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NEW PLANT PLANS "BEST" YEAST FROM SULPHITE

Plans for the construction of a factory for the manufacture of yeast from waste sulphite liquor have been completed by the Best Yeast Company, Thorold, Ontario. The plant will be erected on land leased from the Ontario Paper Company which will supply the yeast company with 10,000,000 gallons of waste pulp liquor annually.

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FIRE DAMAGES CANADIAN PLANT

Fire caused damage totaling about $100,000 to the plant of the Dominion Corrugated Paper Company, Toronto, on January 9. All the buildings but the walls and the engine room were destroyed by flames that swept through the one-and-a-half story building with rapidity. Officials of the company stated that the buildings contained machinery valued at $100,000 and stocks of raw and processed paper worth about $25,000.

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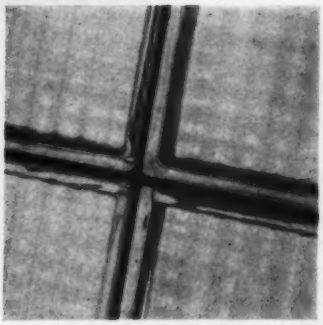
EXPANSION PROGRAM AT BOGALUSA MILL

Installation of a new unit that will add 100 tons to the capacity of the plant is to be effected by the Gaylord Container Corporation, Bogalusa, Louisiana, according to Colonel A. C.

"You'd be smart to use Glass Blocks in building your new mill!

Look what they're doing for us!"

"REMEMBER THE SASH TROUBLE we had in the old plant? Condensation of acid moisture on the windows was so bad that the sash rotted out in almost no time. We were always replacing and painting it. So we used glass blocks in our new plant.



"PC GLASS BLOCKS cured that sash headache. Look. There's no sash in this panel—nothing to corrode and nothing to paint. The whole panel is one easily-cleaned surface of glass and cement. Glass blocks have helped us cut maintenance costs.

"MOST PAPER MILLS have a tough problem of handling condensation on windows. Glass blocks helped us solve that one. Even with a high humidity in here and cold weather outside we seldom have any sweating on the glass block panel. Look—that panel's as dry as a bone right now."

"ONE THING we're very particular about is cleanliness. We're located in a smoky part of town, where soot could filter in around windows and soil paper. With glass blocks we eliminate that trouble. Diffused daylight streams through the blocks, but not a speck of dirt comes through the sealed-up panel.

PC Glass Blocks offer you many practical, money-saving advantages—all in a single building material. Before you make any plans for new construction or remodelling, send for our big, free book on PC Glass Blocks. Full of pictures of actual installations—with valuable facts that will help your plant operation. Send for this FREE book. Mail the coupon today.

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"PITTSBURGH" stands for Quality Glass

GLASS BLOCKS

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Goodyear, chairman of the company's board of directors. The improvement will represent an investment of $1,000,000.

The plant at Bogalusa was originally operated as the Bogalusa Paper Company and was established in conjunction with the operations of the Great Southern Lumber Company. The paper company's original production was 60 tons of kraft paper and container board per day. Today the plant produces about 500 tons, which will be increased to 600 tons when the improvements are made.

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RAYONIER CHANGES PULP TRADE NAMES

Rayonier, Inc., San Francisco (general sales offices in New York City) announces the following changes in the names of its paper grades of pulps:

The old Olympic H-White is now called Raybrite, Grays Harbor Bond is Raybond, Grays Harbor Select is Rayselect, Olympic Standard is Raybook and B-700 becomes Raywhite. Rayonier manufactures four types of dissolving pulps: Purayonier, Hicolor, Rayonier and Cellunier.

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A NEW CHEM. PULP MILL IS RUMORED

The Transcontinental Timber Company, Ltd., Toronto, recently granted a provincial charter, has several plans in view for the development of their timber limits in the Cochrane district, not far from the Hearst holdings. It is understood that the company may erect a 200-ton chemical pulp mill at Mattice, which is 20 miles east of Hearst and 40 miles west of Kapuskasing. According to expectations, construction of the chemical plant will begin in the summer. It is said that the pulp has already been contracted for by a number of American mills and converting plants.

◆

AN ALL-TIME HIGH PRODUCTION IN 1939

An interesting tabulation of United States Paper and Paperboard Production in 1937, 1938, and 1939 appears in the latest issue of *Monthly Statistical Summary* put out by the American Paper and Pulp Association. These figures reveal that the United States production of paper and paperboard established an all-time high in 1939. The Association estimated the 1939 production at 13,441,500 tons, which was 18 per cent higher than 1938 and 5 per cent higher than 1937.

CONVENTIONS AND COMING EVENTS

Feb. 19-22—American Paper and Pulp Association, Annual Meeting, Waldorf-Astoria, New York City.

Feb. 19-22—Technical Association of the Pulp and Paper Industry, Annual Meeting, Roosevelt Hotel, New York City.

Feb. 21—Inter-Society Color Council, Ninth Annual Meeting, Technical Session on Spectrophotometry in the Pulp and Paper Industry, Roosevelt Hotel, New York City.

March 26-29—American Management Association, Tenth Conference on Packaging, Packing and Shipping, Hotel Astor, New York City.

April 1-6—Coastal Empire Paper Festival, Savannah, Georgia.

April 10-12—International Acetylene Association, Annual Convention, Schroeder Hotel, Milwaukee, Wisconsin.

May 19-20—National Paper Box Manufacturers Association, Twenty-second Annual Convention, Coronado Hotel, St. Louis, Missouri.

June 18-20—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Netherland Plaza Hotel, Cincinnati, Ohio.

Oct. 7-11—National Safety Congress and Exposition, Stevens Hotel, Chicago.

CRYSTAL TISSUE CO. STOCKHOLDERS MEET

The annual meeting of the stockholders of The Crystal Tissue Company of Middletown, Ohio, was held in the company's offices on January 23. At the meeting the improvement program of the past year was reviewed and approval given to the plans of the Board of Directors for further plant betterments in 1940. An especially successful year from the standpoint of both business and profits was reported for 1939 with the outlook for an equally profitable year in 1940.

All officers and directors were re-elected for the coming year.

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MAINE SEABOARD CO. IS 10 YEARS OLD

The Maine Seaboard Paper Company will celebrate its tenth birthday in November, 1940. Until the advent of the Southland Paper Mills Company in Lufkin, Texas, the Maine company was the youngest producer of newsprint in America.

The Maine Seaboard Company, located in Bucksport, Maine, has had a very successful record in its ten years and has made constant improvements to its plant. Besides its newsprint, the company has also developed some interesting specialties including car liner paper, stormsheath building paper and a whole list of special school papers.

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NEW UNIT UNDER WAY AT CAN. INDUSTRIES

Canadian Industries, Ltd., are spending about $200,000 on an additional unit at the Hamilton (Ontario) plant for the manufacture of ammonium chloride. Construction work on the necessary buildings and equipment has begun and should be completed by early summer.

Supplies of this chemical have, in the past, been imported from Europe, but owing to the uncertainty of shipping under present conditions the company has developed a new manufacturing process in which Canadian materials are utilized.

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▶▶▶ THE EQUITABLE PAPER BAG COMPANY has moved its Brooklyn plant to 47-00 Thirty First Place, Long Island City, New York. The new plant contains nearly 125,000 square feet of space, 100,000 feet of which is on one floor. A well appointed office of over 8,000 square feet has been laid out scientifically to permit efficient operation between departments. .

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CANADIAN MILLS ADVANCE PRICES

Price advances of from $5 to $10 have been made by the Provincial Paper Company, Howard Smith Paper Company and other Canadian concerns making book, magazine and catalogue paper. The Howard Smith firm and Rolland Paper Company, in addition to other firms, have announced advances of from $5 to $20 on high grade papers. Explanation of the advances is that the price of pulp required for the manufacture of these papers has likewise increased. It is reported that on some very high qualities, the price advance is as high as $40 per ton.

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▶▶▶ NEW ADDITIONS for paper conversion are to be constructed at the Pacific Falls, Ltd., plant at Vancouver, B. C. The contract has been awarded and calls for a mezzanine floor with an area of about 10,000 square feet and the raising of the plant's roof.

Editorial

ADVERTISING PAGES REMOVED

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WOOD PULP SHORTAGE SEEMS IMMINENT

▸▸▸ THE WOOD PULP SITUATION in America is not critical at the present time. However, an acute shortage within the next few months is unescapable due to the following conditions: We are entering the sixth month since the declaration of war by England and France against Germany, and the third month since Russia began the ruthless invasion of Finland. Now, these events drastically affect the relationships of all countries on earth. Every division of commerce and industry in every country of the world is affected.

The wood pulp and paper industry of the world is particularly disrupted. To what ultimate extent, no one can as yet foresee. It all depends upon the duration of the war, and the extension of undeclared wars to present neutral countries.

Already, the pertinent question is asked: "Where are we to get the huge amounts of wood pulp which the war and invasion have eliminated?" In 1937, the United States, England and France,—the three largest consuming countries in the world,—took a total of 4,312,000 tons of pulp from Sweden, Finland, Norway, Germany and other European countries. Of this total, the United States took 1,695,000 tons; England, 1,937,000 tons; and France, 680,000 tons. When war was declared, all of Germany's pulp exports, totaling 121,000 tons, were immediately cut off. The immediate blockade of the North and Baltic Seas, which England and France clamped down on September 3, resulted in diminishing the exports of pulp from Finland, Sweden and Norway by capture, confiscation, sinking of cargoes by U-boats and mines.

On December 1, the invasion of Finland by Russia eliminated all exports of pulp from Finland, a total of 1,325,000 tons annually. Finland was the second largest exporter of pulp in the Scandinavian countries. The exports from the other European countries to the three great consuming countries, totaling 300,000 tons annually, are now practically eliminated. The grand total of eliminated pulp exports from these countries is 1,756,000 tons—gone for the duration of the war.

In 1937, a total of 466,000 tons of pulp was shipped into the United States; 285,000 tons coming from Finland, 69,000 tons from Germany, and 112,000 tons from other European countries. The same year England and France received from Finland 1,040,000 tons of pulp, 52,000 tons from Germany, and 198,000 tons from other European countries—a total of 1,290,000 tons. England and France lose this tonnage on account of the war and the Finnish invasion. These are huge amounts of pulp products to lose, and the sudden contraction in the supply cannot be made up in time to prevent a drastic shortage.

It will be seen from the above figures that the lost pulp hits England and France harder than it does the United States at present, for out of a total of 2,617,000 tons imported by them in 1937 from Sweden, Norway, Finland, and the other European countries, they now face the loss of 1,290,000 tons. Where is it to come from? The logical place would be Canada or the United States. Canada exported 870,000 tons in 1937, of which the United States took 712,000 tons or 82 per cent. It is true England may shortly commandeer all of Canada's export pulp. In that event, England would still be short 136,000 tons; France would still be short 284,000 tons, and the United States would lose an additional 712,000 tons, making the United States total shortage 1,178,000 tons. In any situation, neither Canada nor the United States are in any position to increase their wood pulp exports.

Exports of pulp from Sweden and Norway to England and France are becoming less and less, due to the real menace of invasion by Russia or Germany which has diverted all industries in Sweden and Norway to armament and defense at the expense of pulp production.

The United States, for the same reason, faces further drastic shortages of its pulp imports from Sweden and Norway. The amounts in 1937 were substantial. That year, the United States took 1,229,000 tons and England and France took 1,327,000 tons from those two countries.

The longer the war lasts, England, France and the United States will get less and less pulp from the Scandinavian countries.

How long will the war last? We don't know.

SOMETHING TO WORK FOR

▸▸▸ ARE YOU INTERESTED in a better pulp and paper industry? Would you like to see improvements made that would result in social, economic or commercial benefits to the industry as a whole? Have you any ideas which if developed would contribute to an advance in the industry? Is there an official, executive, engineer, technologist or operator who doesn't aspire to such achievement?

Possibly you have an idea that has been nurtured for years, but you just haven't gotten around to working it out to a practical solution. Perhaps, the proper incentive has been lacking or there may have been other reasons why the idea has lain dormant.

If your idea meets certain specifications, it is just possible that the new $200,000 Industrial Progress Program, announced by The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, might well be the catalyst to bring it out of the nebulous. The Program, instituted for reporting progress studies on the application of the electric arc process of welding, is so broad in scope that there is practically an unlimited number of subjects which are suitable for study. Participation in the Program is open to any one who plays any part in the bringing about of progress in the executive, design, fabrication, manufacture, construction or maintenance phase of industrial product or structure development.

Awards, totaling 458 in number, range from $13,700, the grand award, to $100 for papers deserving honorable mention.

Participants have two and one-half years—January 1, 1940 to June 1, 1942, to pursue their studies and to prepare a report covering their findings.

If you would like to participate in this Program, simply write the Foundation for complete details.

CURRENT THOUGHT

When radio station KDKA went on the air, experimentally, during the late Fall of 1919, to broadcast the returns of the Presidential election which resulted in naming Warren G. Harding, Chief Executive of the United States—very few people heard it. The radio station had been set up in an abandoned barn in Pittsburgh, and at that time there were precious few folks who owned radio receiving sets.

AN AMAZING MIRACLE

WILLIAM SIBLEY

▶▶▶ STATION KDKA was officially established as a radio station, with a definite schedule of broadcast, during 1920. That was twenty years ago. Today there are approximately 27,000,000 radio families in the United States, and there are about 6,000,000 radios installed in motor cars in this country. Few industries have resolved themselves into such a spectacular skyrocket.

Final figures for 1939 are not yet available, but the following data is more reliable than the adjective "approximate" would imply: There are now 750 broadcasting stations in the United States. Over 17,000 men and women devote full-time to broadcasting and draw a weekly pay check in the neighborhood of $800,000. In addition, there are some 6,000 part-time employees who earn approximately $125,000 per week. Today the amount of money spent for radio advertising exceeds, by nearly 10 per cent, the amount of money spent for magazine advertising. Radio station time, bought and used by advertisers, now annually exceeds $150,000,000. According to accepted standards for measurement, the program which commands the largest audience is the Chase & Sanborn show featuring Edgar Bergen and his Charlie McCarthy. The program with the largest hook-up of commercial stations is that of General Foods Corporation (Jell-O) with Jack Benny—118 stations in the United States and Canada.

However amazing may be this spectacular progress in twenty years, it is insignificant when compared to the changes radio has effected in America's fundamental thinking. We know more good music than we ever did before. Artists from Walter Damrosch and his "Music Appreciation Hour" to Alec Templeton with his versatile piano have done more to promote musical culture in this country than all the grand operas and symphony concerts since the days of Dolly Madison.

Since long before the European crisis, September 10-29, 1938, radio brought to one hundred million Americans a direct, immediate, personal and emotional contact with nearly every outstanding leader in public life. Every important figure in government speaks to us over the air. This has made our people government-conscious. During the twenty days of the 1938 Continental crisis the two major networks spent more than $1,250,000 to bring newscasts from every important news center in Europe. H. V. Kaltenborn, alone, was in front of the microphone 102 times in those twenty days. It is not too much to say that radio has helped and will continue to help keep us out of war.

Radio has brought women into the political picture as they never were before. They have become as government conscious as the men; possibly more. Women spend more time at the radio than men. Hundreds of thousands of them keep their sets turned on while doing housework—listening to all sorts of things, including political messages. Women think and talk politics far more today than formerly and here is a new factor of major importance in our political life.

Those who saw the RCA exhibit at the New York World's Fair were amazed to the point of asking the obvious question "What next?" That question, of course, cannot be answered with any large degree of certainty. But as Charles Winninger used to say in *Show Boat* "You ain't seen nothin' yet." Television? Without doubt. RCA already has invested more than twenty millions of dollars in experimental research. When it will become commercially practical no one would hazard a guess. Perhaps facsimile broadcasting will come first. That is a device for transmitting through space such graphic material as printed matter, pictures, writing, diagrams, and the like—then recording it in permanent form at some distant point. Most of us are familiar with radio transmitted photographs from Europe to America. That is facsimile broadcasting. Quite a number of radio stations scattered over the country are now experimenting with the facsimile broadcasting of news. From the station the latest news is put on the air at about 4 a. m. for the recording in homes on long strips of paper so that the owner may have his news, not more than two or three hours old, at his breakfast table.

With the further development of the microwave we may confidently expect to see receiving and transmittal sets attached to telephone wires at specified intervals so that automobiles, similarly equipped, may be in constant touch with home, business office, or each other, without slackening their speed of travel. Pocket-sized transmitting and receiving sets is another probability, and this means keeping policemen on their beat in constant two-way communication with headquarters.

Since the microwave, like the ultra short wave used in television, is (at present) ineffective beyond the horizon, its use would encourage the building of broadcasting stations in every village, thus giving each community a voice of its own for local affairs and civic betterment. Perhaps even more important is the development, through these waves, of means for broadcasting heat, light and power. All three elements have been broadcast successfully by radio on an experimental basis and their further development undoubtedly is more imminent than is popularly supposed.

Amazing as the progress of this modern miracle has been during the past twenty years, the future promises even more spectacular developments. Radio will continue to broaden its public service. Thus far its contribution to the welfare of mankind has been due largely to the electrical scientist. Now it is rapidly imposing an even greater task on the social scientist—that this great instrumentality may be directed so that it will continue to promote the welfare of mankind.

ADVERTISING PAGES REMOVED

Infrared Photomicrography

Reveals Plant Cell-Wall Structure

W. FRANK FOWLER, JR.[1] and WILLIAM M. HARLOW[2]

▶▶▶ STUDIES ON THE STRUCTURE AND CHEMISTRY of the woody plant cell wall are of importance to the papermaker as well as the researcher because the objective of such studies is a clearer understanding of the composition of the raw material from which paper is made: viz., the wood fiber itself. Considerable work has been done on the effect of various commercial pulping treatments on the structure of the fiber *(1)*, where an accurate picture of the original wall was a primary consideration.

The evidence accumulated by the use of various chemical reagents on thin sections of wood and observations made with the polarizing microscope point strongly to the organization of the cell wall as advanced by Kerr and Bailey *(6)*. Their nomenclature has been followed by Bixler *(1)*, Harlow *(4)*, Coppick and Fowler *(2)*, and others, and will be used here. A clear photographic illustration of the primary wall in relation to adjacent layers in the original, untreated wood, to the authors' knowledge, has not been published. Usually, the "compound middle lamella" consisting of intercellular substance (removed in pulping) and adjacent primary walls, appears as a single dark line. This paper describes a method whereby such microscopic structures of the cell wall can be distinguished by the use of infrared radiations.

The photomicrography of wood sections usually employs various qualities of light from the visible spectrum (or ultraviolet light to increase resolving power). However, according to Clark *(3)*, the extensive studies of Mees on photomicrographic methods have resulted in the establishment of two fundamental principles: (1) To obtain maximum rendering of detail, the subject should be photographed in light which is transmitted by it. (2) To obtain maximum rendering of contrast, the subject should be photographed by light which is absorbed by the stain used. "Therefore," according to Clark *(3)*, "in order to obtain satisfactory rendering of contrast in the infrared, it is necessary to select those stains which absorb the infrared in the region of the spectrum to which the plate or film responds. In order to obtain satisfactory rendering of detail, the subject must be transparent to the infrared in this region." When the photographing of thin wood sections of fibers is considered from this standpoint, the use of infrared holds promise.

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AUTHOR'S NOTE: A method of preparing photomicrographs of thin sections of chemically untreated eastern white pine wood is described, wherein neocyanine, an infrared absorbing dye, is used to stain the section, and infrared radiation and special infrared sensitive film are used. The resulting photomicrograph resolves the "compound middle lamella" into its component parts—the true intercellular substance and adjacent primary walls.

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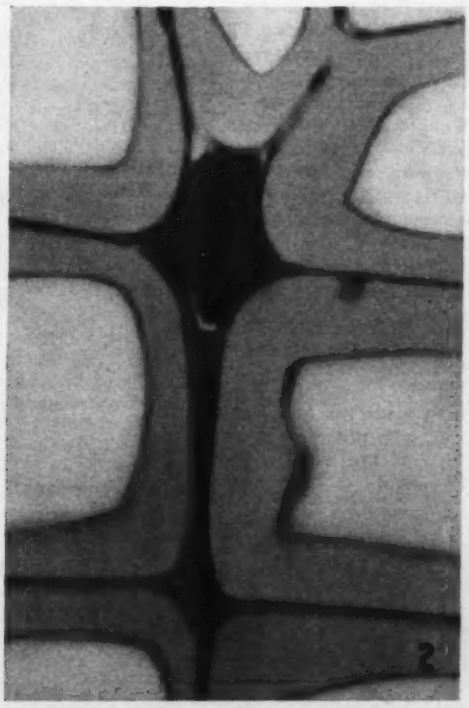

Fig. 1—Transverse section of white pine wood; stained lightly with haematoxylin and photographed on infrared film X-720.

Fig. 2—The same; stained with neocyanine and photographed on infrared film. (Total enlargement 2000 diameters.)

Fig. 3—The same; stained lightly with haematoxylin and photographed on ordinary panchromatic film X-720.

Prat *(7)*, using thin wedges of various woods has shown that infrared radiation can penetrate wood and affect an infrared sensitized film on the side of the wedge opposite the source of the radiations. Rawling *(9)* has further shown that softwoods transmit these wave lengths freely while certain hardwoods, mostly tropical species, do not. Thus, if a softwood species is selected, it appears that the first principle of Mees is satisfied.

In the present study, the film used was Aero Panchromatic K, with an infrared sensitive emulsion, sensitized from 6500 to 8500 Å, with a maximum sensitivity at 8000 Å. The dye, neocyanine, used in these experiments and also procured from the Eastman Kodak Company, has an absorption maximum at 7750 Å, which very closely approaches the value for maximum sensitivity of the film. When thin sections of a softwood species are stained with neocyanine, the second condition of Mees has been fulfilled.

Experimental Part

Small blocks of dried sapwood of eastern white pine, *Pinus strobus* L., were aspirated in cold distilled water and transverse sections four and five microns in thickness were cut on a sliding microtome. Certain of the sections were stained lightly with Heidenhain's iron-alum haematoxylin, while others were stained for one-half hour with a staining reagent made up in the following way:

0.020 grams of neocyanine
50cc. of distilled water
10cc. of 95 per cent aqueous alcohol

(Note: The dye was dissolved in the alcohol and this solution added to the water.) All sections were subsequently dehydrated in the usual manner, cleared in xylol, and mounted in balsam.

Photomicrographs of the sections stained with Heidenhain's iron-alum haematoxylin were taken on ordinary Eastman panchromatic film at 720 diameters using a ribbon-filament lamp as the light source and no filter. The result is shown in Figure 3. The same lamp was used for the infrared photomicrographs since Clark *(3)* stated that "most commercial lamps have maximum energy emitted from 7000 to 11000 Å. A similar photomicrograph of the same section was taken using the infrared film and a Wratten No. 88 filter, transmitting light beyond 7200 Å, in wave length. Focusing on the ground glass was done by inserting a Wratten No. 25 filter in the beam of the lamp in place of the No. 88 filter. It was found advisable to use this focusing procedure in order to obtain a more accurate focus for infrared radiation since the lenses used were not achromatized for such radiation *(5)*. The resulting photomicrograph (Figure 1) was not appreciably different from that obtained with ordinary panchromatic film (Figure 3). Haematoxylin was tried because of the infrared photomicrographs showing fine details of chromosomes stained with this dye, obtained by Prat *(8)*.

Infrared photomicrographs of sections stained in neocyanine were striking in that the "compound middle lamella" was resolved into *(1)* the very dark true intercellular substance and *(2)* the adjacent primary walls on each side (Figure 2). However, sections stained with neocyanine and photographed with ordinary panchromatic film produced a photomicrograph very similar to Figure 3.

Discussion

Infrared light, in the photomicrography of wood, gives unusual detail when the proper stain is used (in this case, neocyanine) but it does not do so with stains such as Heidenhain's iron-alum haematoxylin. A narrow band of wave lengths was used whose penetration through the thin section of wood is capable of regulation by varying either the concentration of the infrared-absorbing dye, or the time of staining, or both, to produce the desired balance between detail and contrast. As may be seen, such photomicrographs (Figure 2) show great contrast as compared with ordinary ones (Figure 3). In the present instance, staining and exposure were timed to give greatest detail in the central layers, and, therefore, the secondary wall lacks satisfactory definition. This is readily attained by lengthening the time of staining, exposure, or both.

Figure 2 shows the structure of the "compound middle lamella" in detail in the region below the large dark area of true intercellular substance. The primary walls are clearly defined and appear to close tightly together (lower center). That this might occur has been suggested by one of the authors *(4)* in attempting to explain why many cells in delignified sections failed to separate without mechanical treatment. It was thought "that during cell growth, the intercellular substance is squeezed so thin, especially on the tangential faces of cells in conifers, that the primary walls occasionally make contact with each other". Figure 2 seems to strengthen this assumption since the "compound middle lamella" in the tangential walls of the cells is thinner than on the radial walls and the intercellular substance is not visible in the former instance.

Summary

Infrared photomicrographs of transverse sections of eastern white pine wood show clearly the structure of the "compound middle lamella," resolving it into its component parts, the primary walls and the true intercellular substance. Furthermore, previous observations on the primary wall made after chemical treatment of thin sections have been confirmed.

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Metal-Enclosed Switchgear Application *to Paper Mills*

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RELIABLE and dependable power supply for paper mills has become absolutely essential to their successful operation. In the early days of the industry, steam drives were common, and the electric energy supply might have been considered secondary to the main power. Not so today, where everything is electrical.

The control and distribution of this power is no less important than the primary generation, and has an equal influence upon the reliability of the energy supply. Interruptions from any source cannot be tolerated in modern continuous process mills.

Dependability of the switchgear is determined (1) by the proven reliability of the circuit breaker, and (2) by the auxiliaries and the structure which incorporates the assembly of switching devices. This article is concerned only with metal enclosures for such equipment.

There are two principal types of metal-enclosed switchgear applicable to paper mills; cubicles and metal-clad switchgear. The latter is again subdivided into two types; vertical drawout, and horizontal drawout. The vertical movement to disconnect the breaker is the most suitable for oil circuit breakers, and the horizontal for certain air-type circuit breakers. In both metal-clad designs all buses and connections are completely insulated, and metal isolation is carried out between the three principal elements; breaker, bus, and outgoing or incoming connections.

The essential difference between cubicles and metal-clad switchgear is the fixed type breaker in the cubicle and the general practice of using bare buses and connections in this type of construction. Isolation of the circuit breaker is accomplished by means of disconnecting switches, usually group operated and interlocked with the breaker. Figures 1, 2, and 3 show typical units of the three types of construction.

▶▶▶ The selection of one design over another is usually determined by local conditions and the severity of duty on the circuit breaker. For instance, an installation to control a number of pumps might require the breakers to start and stop the motors frequently. For such an application it would be desirable, first, to select a circuit breaker suitable for such duty and, next, to specify metal-clad switchgear so that inspection and maintenance of the breaker could be carried on with the maximum convenience, even to the replacing of the unit if that proved necessary. On the other hand, if the application were to feeders where breaker duty was moderate and operation infrequent, fixed type mounting might be entirely satisfactory. It is undesirable to set down hard and fast rules, and it is only intended here to call attention to certain points which influence the application of the equipment.

In any case, the advantages of factory-assembled and tested switchgear are obtained, and these are becoming more appreciated year by year as it becomes more difficult to train and maintain expert construction staffs. Not the smallest advantage is the time saved in placing the equipment in service after its installation. A recent example may be cited, even though not a paper mill installation. Complete automatic switchgear, together with a transformer and ignition rectifier, was in operation forty-eight hours after its receipt at the property—a coal mine in Pennsylvania. Similar instances are common in comparison with the delays, shortages, and similar interferences where incomplete and unassembled equipment has been purchased.

▶▶▶ Another advantage of metal-enclosed switchgear is the saving of space. This may appear in several ways. It may permit relocation of switchgear in a more desirable location; it may mean more units in the same space, or it may enable needed increased interrupting capacity breakers to be installed in place of an existing inadequate structure. Very few paper mills (or other industrial plants which have been operating a number of years) do not need studies of their circuit breaker interrupting duty requirements. In too many cases, it is unfortunate that a major shutdown is required to call attention to the existing conditions.

Most paper mills have two main voltage classes for a-c. power; 2300 and 440 or 550. The practice has been to use 2300 volts on motors of about 50 horsepower and above and the lower voltage for the remainder, the decision depending on local factors such as cost of distribution as compared with cost of motor and control. Metal-enclosed switchgear is available for the majority of voltage classifications. Figure 4 shows a typical metal-clad structure applicable to circuits of 2300 to 15,000 volts, while Figure 5 pictures a low voltage metal-enclosed structure, which can be applied to 125, 250, 440, or 600 volts. Oil breakers are more commonly used for the higher voltages, although air types are available. For the low voltage applications, air breakers are used almost exclusively.

Full advantage of factory-assembly is not taken unless several units are shipped in an assembled group with cross connections completed in the factory. This method can be used with any metal-enclosed type of construction and greatly reduces the time and cost of installation. It is recognized that certain locations will not permit more than a single unit to pass through existing doors, consequently, this point is always checked before shipment is made. However, it is advantageous to both the user and the manufacturer to ship the largest structure which can be handled safely.

▶▶▶ It might be desirable to consider briefly the type of metal-enclosed structures which best suit the different applications in typical paper mills. For the main switchgear in the power station, whether the primary energy be purchased or generated, flexibility and reliability dictate the selection of metal-clad switchgear. This provides the disconnecting type breaker unit which permits convenient and rapid removal and replacement of a circuit breaker for maintenance or repair. If a double bus structure is used, this can be done without interruption to service. In any case, the length of the interruption would be reduced to the minimum. A structure such as Figure 4 well suits an application of this kind.

It has become quite common practice to mount instruments, meters, and relays upon panels incorporated in the metal-clad

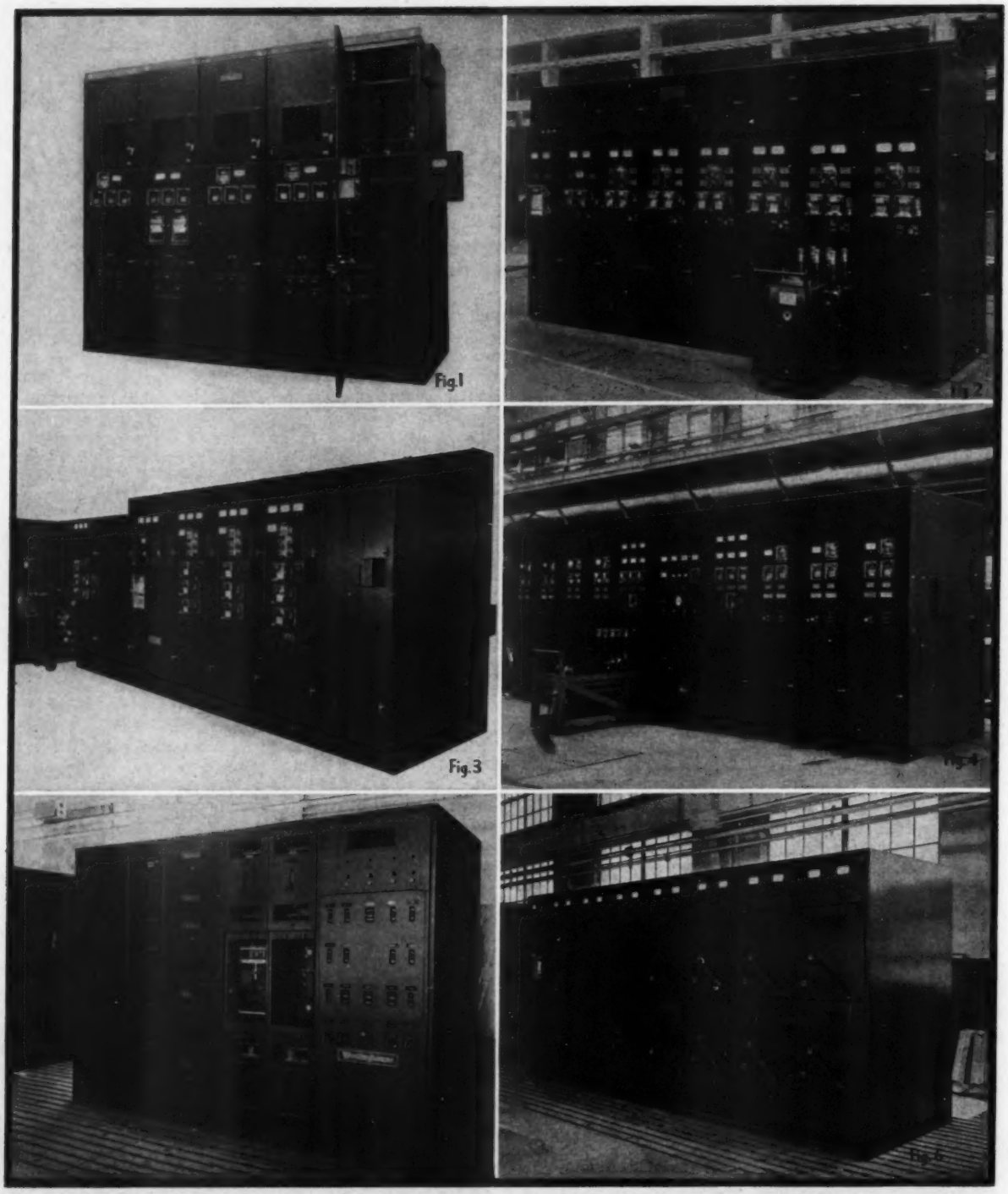


Fig. 1—Cubicle type switchgear controlling an incoming line and four distribution feeders. Manually-operated breakers, gang-operated, interlocked, disconnecting switches and controls combined in a complete factory assembly. Panels streamlined with semi-flush equipment.

Fig. 2—Metal-clad, vertical lift-type switchgear for light duty circuits at 2300 volts (50,000 kv.-a. interrupting capacity).

Fig. 3—Metal-clad, horizontal drawout switchgear with "U" De-Ion air circuit breakers and associated control suitable for industrial feeders.

Fig. 4—Heavy-duty, metal-clad switchgear, vertical lift type, suitable for 2300 to 15,000 volt applications in generating stations or substations. Generator voltage regulators on the center panel.

Fig. 5—Metal-enclosed switchgear for the control of 500-volt and below circuits, using removable type air circuit breakers.

Fig. 6—Heavy-duty, removable-type air breakers for low voltage circuits hand operated.

Fig. 7—Single-unit outdoor switchhouse. Isolating disconnecting switches are available in housings with greater height.

structure. However, for the main switchgear installation in the power plant of an important mill, a separate switchboard or control desk is recommended. However, this would be completely factory wired and shipped in the minimum number of sections.

For the auxiliary circuits in the generating station similar equipment, except of low capacity, should be used for 2300-volt circuits, and a structure like that in Figure 5 for the lower voltages. However, for these applications the instrument panels should be mounted upon the metal-clad units. Such a structure is shown in Figure 6. This combination eliminates conduit and control cable runs between the switchgear and a separate board, as well as the testing of these circuits after installation. It also reduces the length of instrument transformer connections and, in general, simplifies both the installation and operation. All instruments and relays are mounted and shipped in place after being given a complete operation test with primary current and voltage applied to the instrument transformers. Such a test is fully appreciated only by those who have had to assemble and place in operation in the field separate devices.

One indication of the dependence which can be placed in metal-clad switchgear for the auxiliaries of even the largest stations is the simplification of bus arrangements which has been found possible. Where more or less complicated double bus layouts were formerly used, a single bus on the unit basis is now almost universal practice.

Distribution points throughout the mill may be taken care of by cubicle installations, except where repetitive or other severe breaker duty make the convenience of metal-clad gear essential. In any case, the instruments and relays should be incorporated with the switchgear breaker structure. For these applications it may be found desirable to use an outdoor cubicle or switchhouse such as is shown in Figure 7. Many paper mills have the various buildings and consequently the load scattered over a rather wide territory, which makes such outdoor units quite advantageous. It may not be appreciated that units of this type may be moved readily to take care of a temporary load condition or a shifting one, such as wood storage conditions might require. Full metal-clad construction is available in outdoor designs if required.

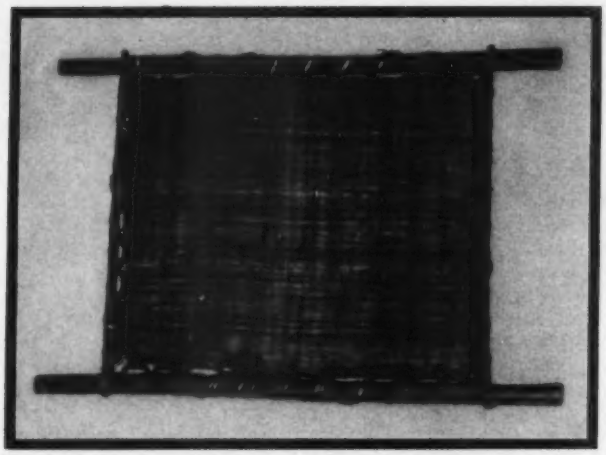
▶▶▶ No mention has been made of the relative advantages of oil and air circuit breakers, and since the selection may affect the metal-enclosed switchgear design, they will be touched upon briefly here. Oil circuit breakers have been greatly improved in the past ten years due to the fundamental development work carried on in the large testing laboratories which are available. For all but the most severe service, in most cases of the highly repetitive type, they are entirely satisfactory. However, there is also a growing demand for the elimination of oil, and there are certain applications where the De-ion air circuit breaker has been found to be superior to other switching devices in regard to satisfactory operation and reduction in maintenance. Some recent applications have been as follows:

1) Frequent starting and stopping of pump motors.
2) Reversing mill motors for steel mills.
3) Arc furnaces.
4) Steam station auxiliaries, such as draft fan motor control.

When it is realized that reported breaker operations for these applications range up to 4800 in less than three weeks,

(Concluded on page 1169)

Fig. 8 (left)—Switchboard controlling paper machine drive with the turbine generating equipment and auxiliaries in background. Fig. 9 (right)—2300-volt cubicle group in the brown stock washing department of a southern paper mill.



Handmade Paper Molds

The original type of hand mold (Fig. 1, left) as conceived by the Chinese about 105 A.D. was a simple framework of bamboo, over which was stretched a piece of coarsely-woven cloth.

DARD HUNTER
Dard Hunter Paper Museum
Massachusetts Institute of Technology

▸▸▸ THE PAPER OF THE ORIENT, as well as all paper fabricated in Europe and America until the early nineteenth century (when the paper-machine was perfected), was formed, each sheet separately, in a hand-mold.

The original hand-mold, conceived by the Chinese about 105 A. D., was simply a square frame-work of bamboo, like a picture frame, over which was stretched a piece of woven cloth. The meshes of this textile were close enough to retain the macerated fibers and yet sufficiently open to allow the water to drain through. (Figure 1). The earliest type of the Chinese cloth-covered mold may have been used in two different ways: In the first method, the fibers mixed with water and held in a bowl or jar, were *thrown upon* the mold; while in the second method, enduring to the present day, the mold was *dipped into* the macerated fibers suspended in a tank or vat of water. With either method, the warp and woof of the cloth retained the fibers and the water drained through the interstices of the woven material. With this type of "wove" mold, dating from the first few years of papermaking, the moist sheet had to be allowed to day upon the surface of the mold,—it could not be removed until the paper was dry. Therefore, if much paper was to be made, a large number of molds was needed, as shown in Figure 2.

The "Laid" Mold

It is not known when the "laid" transfer mold (Figure 3) first came into use, but it was an oriental invention and upon this implement the modern craft of papermaking rests. The earliest paper that has been discovered *(1)* shows clearly the "laid" and "chain" lines of the molds upon which it was formed. It is my contention that the Chinese used the "wove" mold during the first few years of papermaking and that the "laid" mold was a later discovery. No paper exists from the first forty-five or fifty years of papermaking and therefore the type of mold used during the embryo years of the craft can be nothing more than conjecture. The invention of the "laid" type of mold, composed of bamboo splints laced together at intervals with horschair, was the real step forward in papermaking. With the ancient type of "wove" mold, the sheet of paper formed thereon had to dry upon the mold's surface, but with the flexible "laid" transfer mold, the moist sheet of matted fibers could be removed immediately after the mold had been

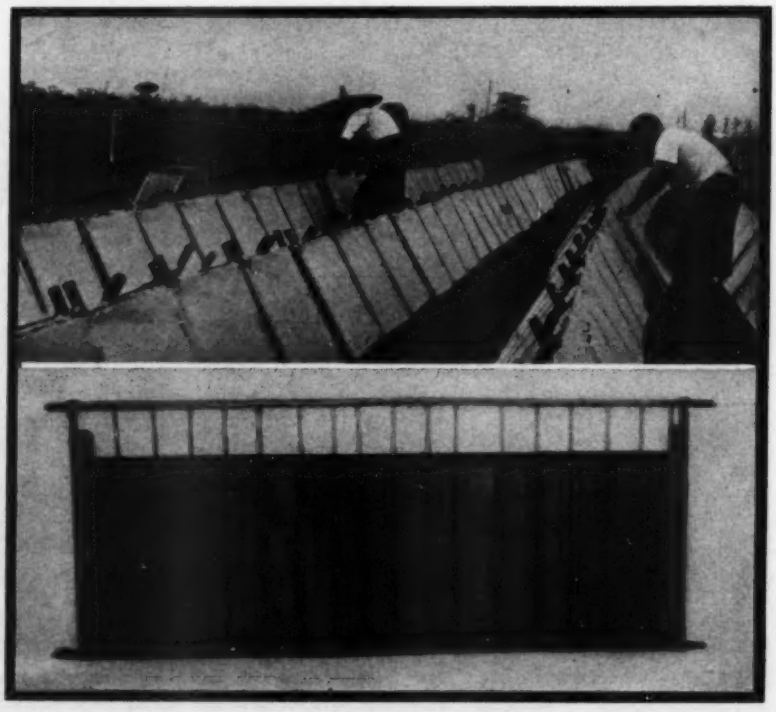


Fig. 2—(above) With the original type of "wove" mold (Fig. 1), the paper was allowed to dry upon the surface of the cloth. If much paper was to be made, many molds were required. (Photograph taken in Fatshan, Kwangtung Province, South China. . . . Fig. 3—(below) It is not known exactly when the original type of flexible "laid" bamboo mold came into use, but it was probably invented during the first quarter of the second century A.D. The conception of this type of mold was a real step forward in papermaking, as the mold being flexible, the sheets could be "couched" while moist. The entire paper industry, including the most modern paper machine, is based on the principle of this transfer mold of Asia.

dipped, the one mold being used again and again without interruption.

European Molds

When papermaking was introduced into Spain about the year 1144, it is probable that the European workmen made use of bamboo molds of the type that had been conceived in China a thousand years previously. It was not long, however, before the European artisans had substituted metal wires in place of bamboo and horsehair; bamboo was not a commodity readily obtainable in the Occident. Also, in place of the oriental flexible "laid" mold-cover which was removable from the mold-frame, the Spanish papermakers adapted the rigid mold as more suited to the formation of rag fibers into sheets of paper. The Europeans used a fence, or "deckle," to keep the sheets of newly-formed paper within bounds, just as had been the practice in the East.

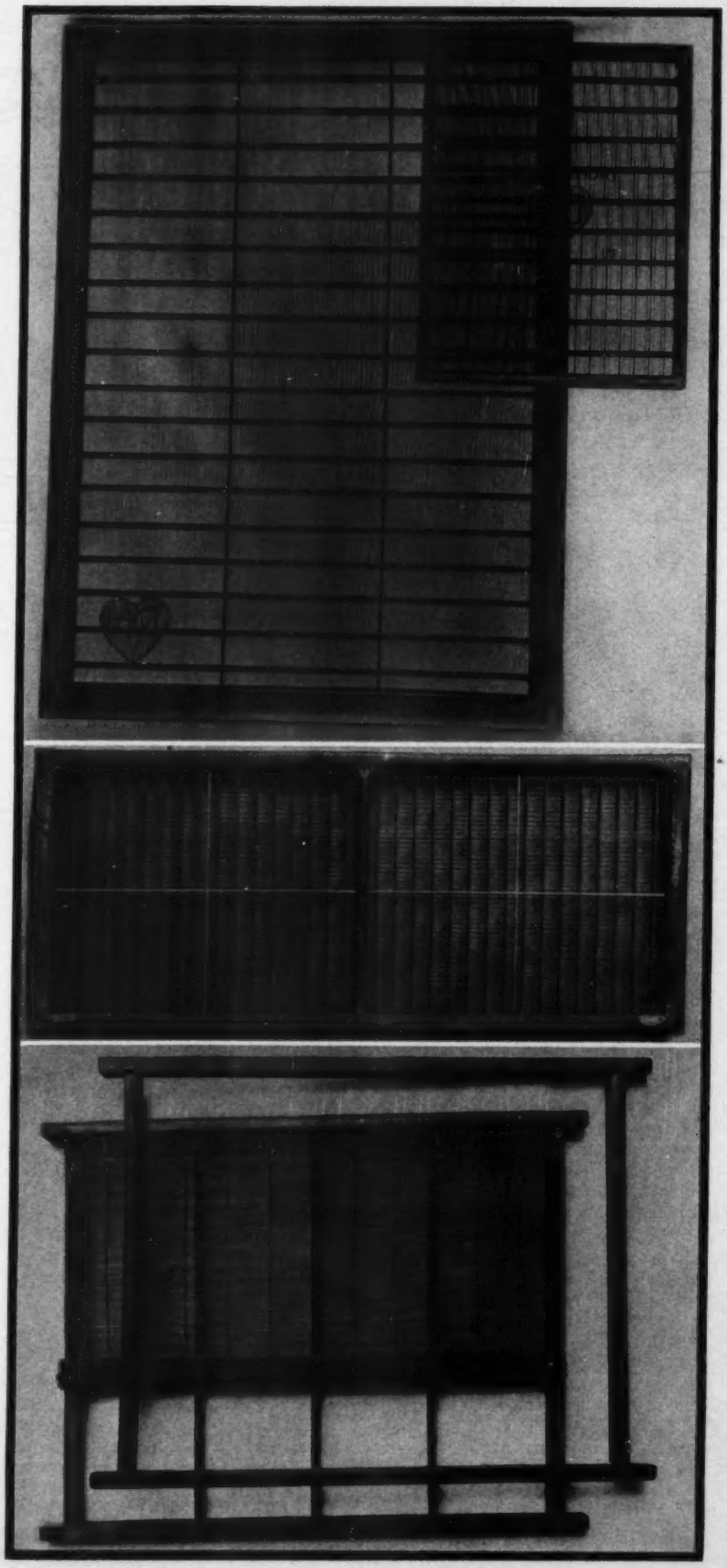


Fig. 4—(above) The small mold, without deckle, is of the "modern laid" pattern, while the full-sized mold is an "antique laid." Molds of this type are used at the present time in making commercial handmade papers. . . . Fig. 4a—(center) A modern mold fitted with "tearing wires." In forming paper upon a mold of this type, the stock, or pulp, is held thinner along the course of the wires, causing the paper to tear in a ragged line somewhat resembling a genuine deckle edge. With this particular mold, eight sheets of note paper, each with its individual watermark, may be formed at one dipping of the implement. . . . Fig. 5—(below) A modern Japanese mold of the flexible "laid" bamboo type. This mold is capable of forming sheets of paper measuring about 13 by 16 inches.

By comparing the illustration of the European mold (Figure 4) with that of the traditional Asiatic mold (Figure 5), it will be seen that the implement has undergone but few pronounced changes in its transposition from the Orient to the Occident. The western type of wood and metal molds were in use in the various countries of Europe from almost the inception of papermaking in Spain, and are used to the present day by the makers of handmade paper. Molds of this rigid wire type were employed by William Rittenhouse, in 1690, in America's first paper mill, and they were used in this country until about 1860, when the craft of forming sheets of paper by hand gave way entirely to the paper machine. In Europe, there are still a few mills where handmade paper is fabricated.

The Modern Mold and Deckle

The mold constitutes the principal apparatus used in the making of paper by hand. Molds are used to con-

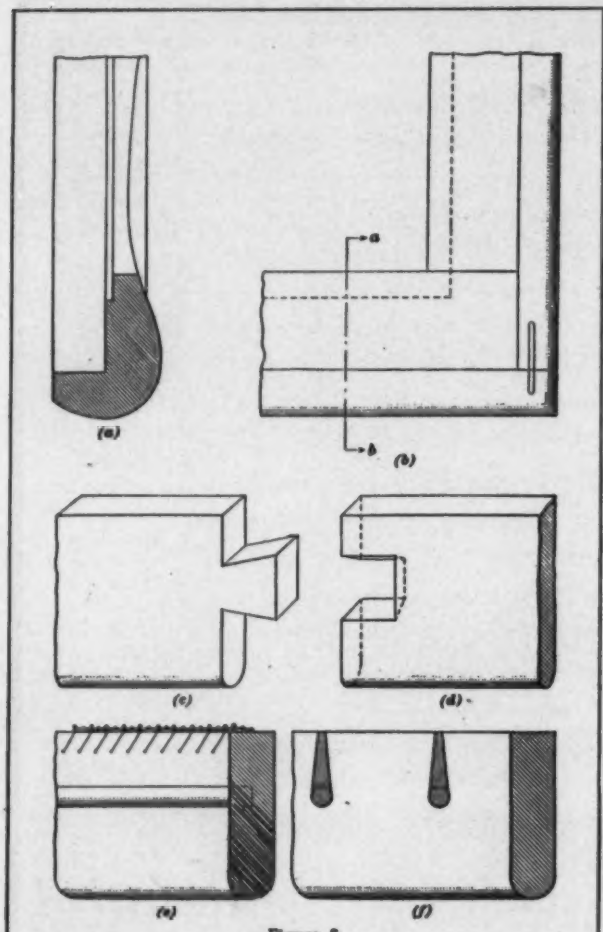


Figure 6

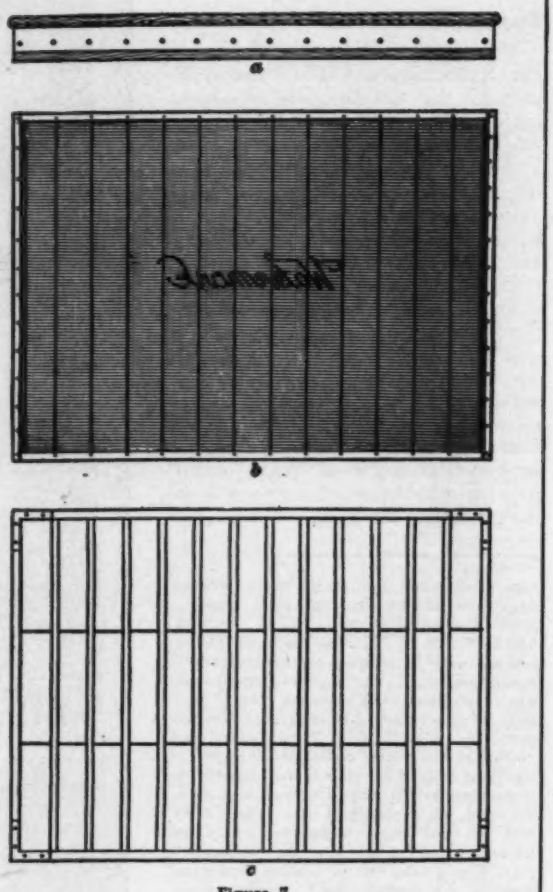


Figure 7

vey the fibrous stock, or pulp, into sheets of an even size and thickness. They are rectangular-shaped frames of wood, not unlike a picture frame, the upper side being covered with woven wire that will retain the fibers, and, at the same time, allow the water to drain through, in the manner of a sieve. The deckle is the cover which fits over the mold on all four sides, leaving the metal wire covering exposed. The deckle acts as a fence around the mold, keeping the paper stock within bounds and determining the size of the sheet being made.

The ordinary molds (Figures 4-4a) in use in commercial handmade paper mills are usually made of mahogany, the material being between five-twelfths of an inch in thickness and constructed like a very shallow rectangular box, without top or bottom. The corners are joined as shown in *(c)* and *(d)* of Figure 6, the ends dovetailing into each other. The sides that make up the frame are rounded on the underedges, as indicated in *(e)* and *(f)* of Figure 6. The frame is bound at the corners with brass strips screwed to the wood, as shown in *(c)* Figure 7. Running across this rectangular frame, from one long side to the other, are wooden ribs (Figure 8), the tops of which are flush with the top of the mold, and about one and one-eighth inches apart. The ribs have a wedge-shaped cross-section which causes a suction that acts on the top face of the mold when it is lifted from the vat. The ribs are fastened to the frame of the mold by small, round projections on their ends. These pegs fit into holes bored in the frame. Figure 6 *(e)* shows a side view of one of these ribs, and Figure 6 *(f)* shows an end view of two of them. The ribs stand so that their center lines are perpendicular to the faces of the frame, the wide edge being down. This makes the opening between the ribs smaller at the bottom than at the top; and when the frame is raised vertically upward through the liquid stock, this construction causes more of the liquid to be lifted than flows immediately through the opening, the result being that a partial vacuum is left behind, which causes a slight suction. The ribs are braced by one or two heavy brass wires running through them lengthwise of the frame (from one short side to the other), as shown in Figure 7 *(c)* and Figure 8.

After the wooden parts of the mold have been completed, with frame, ribs, and fastenings in place, the wire covering is added. This covering may be either "laid" or "wove," since the woodwork is the same in either case. For making a "laid" mold, Figure 7 *(b)*, the first covering added is a series of wires which act as a backing. These backing wires average about nine to the inch. The heavier wires of this backing run the long way of the mold (from left to right, as the mold is held in the hands of the papermaker). However, before this backing is added to the wooden frame, it is stitched together with finer wires running in a direction at right angles to that of the heavier lengthwise running wires; and these finer wires are so spaced that each falls directly over one of the wooden ribs. After the backing wires are applied, the "laid" wires are added. These wires are woven in the same manner as the backing, but the "laid," or outside wires, are spaced closer together, aver-

aging about twenty-two to the inch in an ordinary mold. The two coverings, the latter on top of the former, are stitched or sewed to the ribs with fine wire, the ribs being pierced for the purpose, as indicated in Figur 6 *(e)*. The ends of these wires are fastened with small copper nails along the mahogany frame, the entire four edges being bound with a narrow strip of copper, thus securing all of the free ends of the wires. A finished mold is shown in Figure 7 *(b)*. In comparing the modern European mold covering (Figure 4) with that of the Orient (Figures 3-5), the similarity will be noted; as the "laid" brass wire mold of the Occident has been founded and patterned directly on the oriental "laid" bamboo mold of ancient times.

In a European "wove" mold (Figures 9-10), the covering is finely-woven brass wire gauze, made in the same manner as window screening, only more compact, the average number of wires, both ways, being about fifty-two to the inch. The "wove" covering is applied to the wooden frame of the mold over a backing of coarser woven wire, and is stitched to the ribs of the mold so as to lie flat. It is then tacked and bound with strips of copper in the same manner as the "laid" covering. Along the four edges of the "wove" covering the wire gauze is pierced with holes to help drainage. These holes are about three-eighths of an inch apart and placed so that they come under the deckle when it is placed on the mold.

Over the mold, whether it is "laid" or "wove," is fitted a deckle, shown on a mold is Fgures 6 and 7 *(a)*. It is the deckle that determines the size of the sheet to be made on the mold, but it has little to do with the thickness of the sheet of paper. In commercial papermaking by hand there must be two molds and one deckle for every size of sheet to be molded. The deckle, or fence, must fit each mold equally well and should slip on and off easily. A sectional view of the deckle, taken on the line *ab*, is shown in Figure 6 *(a)*. Figure 6 *(b)* shows a corner of the deckle, as viewed from underneath; that is, when looking at the side which lies next the mold.

The making of molds and deckles for commercial handmade paper mills is extremely difficult work; it requires not only great skill, but also a good knowledge of materials. The wood must be seasoned with care, as it has to withstand the constant strain of being in and out of warm water. There are no firms in America making wood molds for handmade paper, but in England there are several artisans engaged in work of this kind.

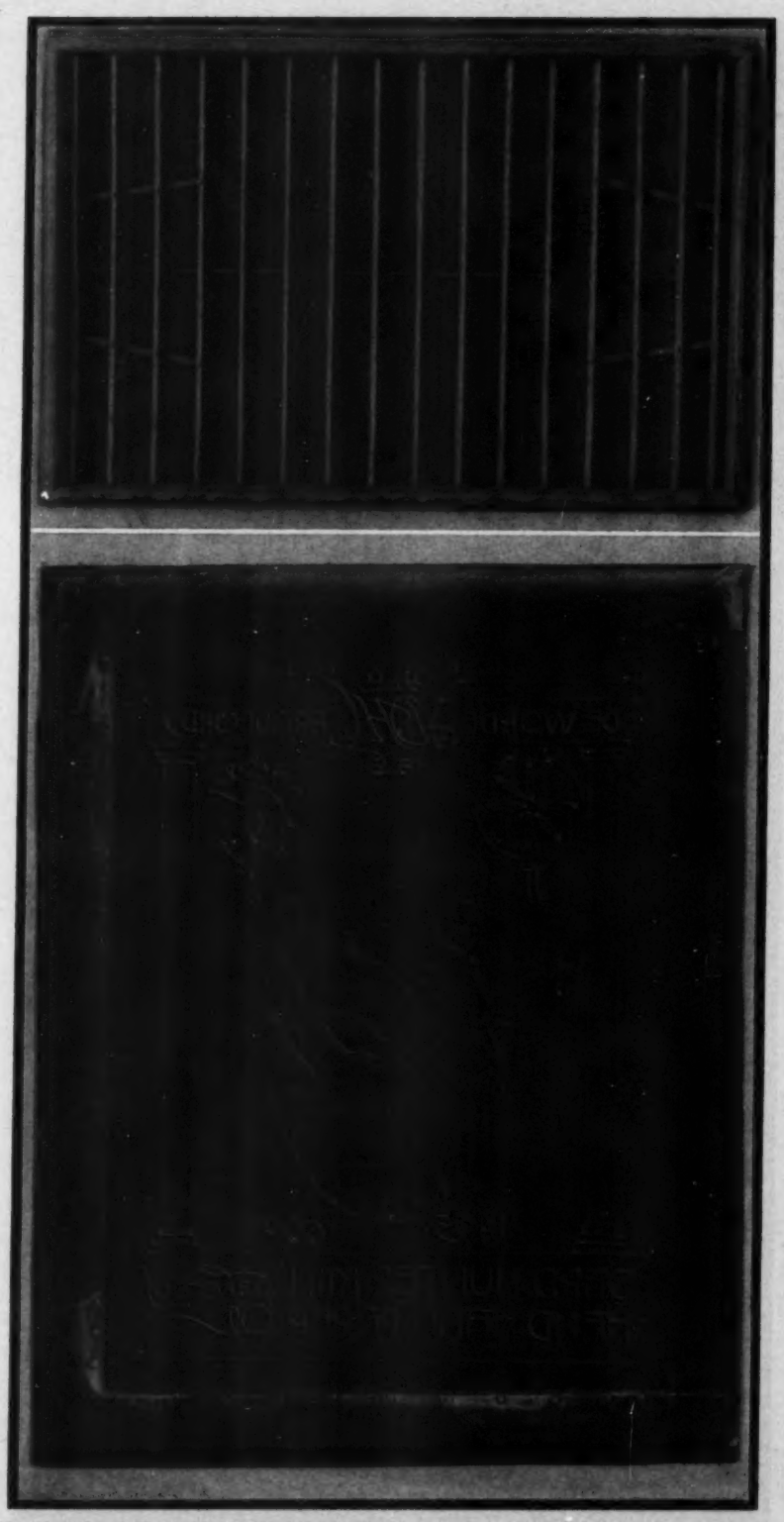
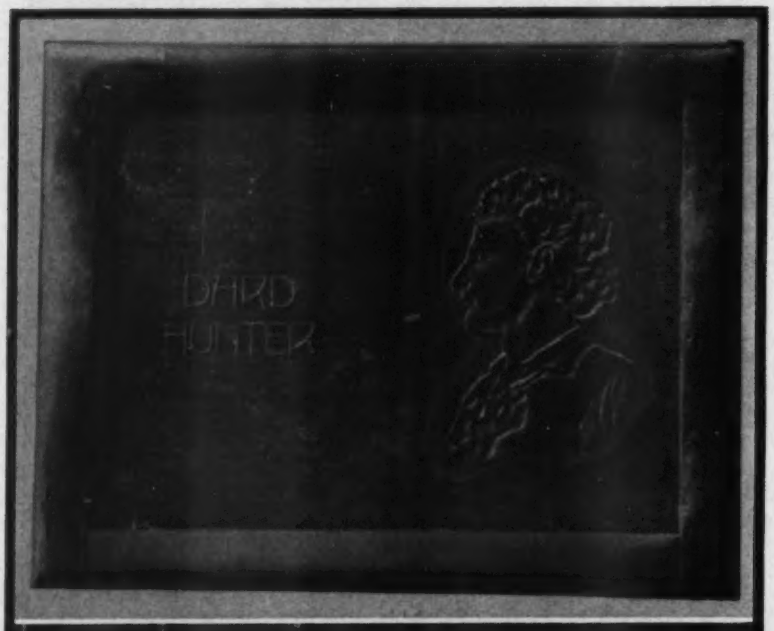
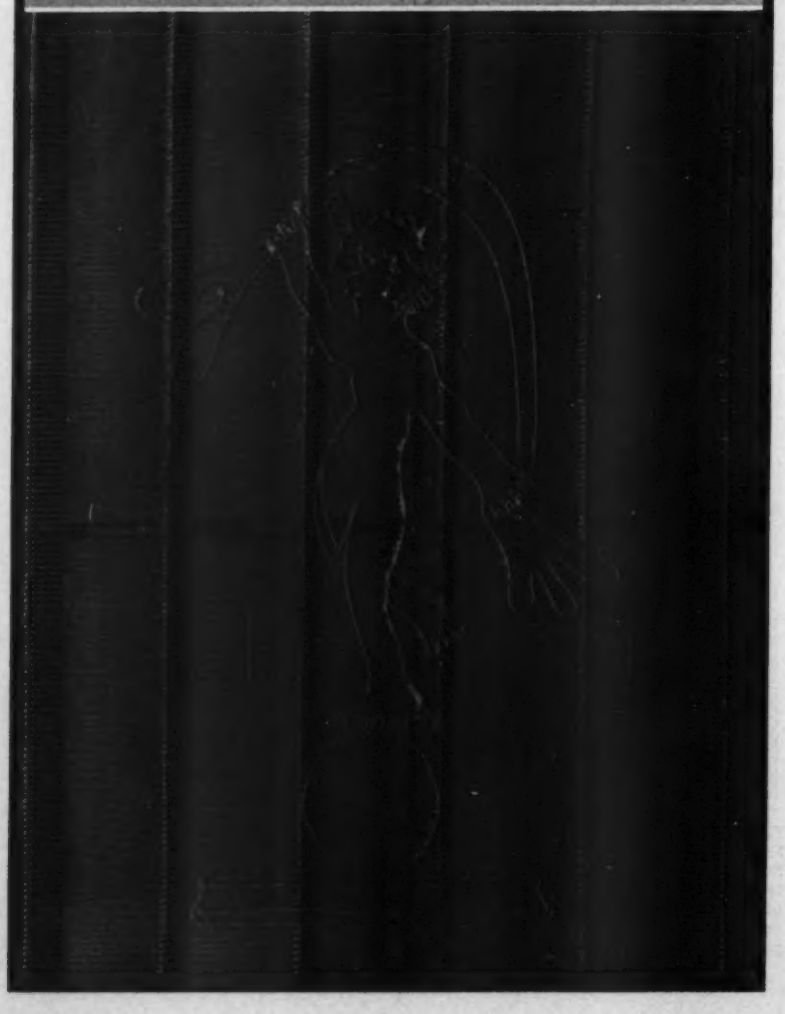


Fig. 8—(above) The back of a hand mold showing the construction of the ribs. This is a French mold from about the year 1818; all French molds are braced in this manner. . . . Fig. 9—(below) A mold of the "wove" type with a complicated watermark. The lettering is done in wire. The watermarking wires are usually placed in reverse upon the molds, as in this case. The watermark in the upper right corner of this mold is the device of John Tate, the first papermaker in England, 1495. De Worde was the first printer to use Tate paper. The shield watermark in the upper left corner is that of William Rittenhouse, the first papermaker in America (1690). William Bradford was the first printer to use Rittenhouse paper.

Fig. 10—(top) A mold for watermarking a portrait. Owing to the expense involved in making molds of this type, "light and shade" portraits would hardly be feasible for commercial use. The cost of a mold of this kind would be close to a thousand dollars before a sheet of paper was fabricated. . . . Fig. 11—(bottom) This common type of line watermarking was done as early as 1270 A.D. and it remains to this day the most widely used method. In this particular case, the twisted wires are sewed to the surface of the "laid" wires of the mold, while in some instances the watermarking wires are attached by soldering.





The Sizes of Handmade Paper

While there are more than 240 recognized sizes of handmade paper, in this description it will be necessary to enumerate only a few of the well known names and sizes:

Name	*Size*
Antiquarian*	53x31
Atlas	34x26
Colombier	34½x23½
Crown	20x15
Demy	22x17½
Double Crown	30x20
Double Demy	35x22½
Double Elephant	40x27
Double Foolscap	26½x16½
Double Medium	36x23
Elephant	28x23
Foolscap	16½x13¼
Imperial	30x22
Large Post	21x16½
Royal	24x19
Small Demy	20x15½
Super Royal	27x19

During the early centuries of papermaking, the oriental artisans did not make use of watermarking. The possibility of impressing emblems and devices in their paper no doubt occurred to them because the "laid" and "chain" lines left their indents in the paper in exactly the same manner as a watermark is made. The oriental molds were fabricated of bamboo splints, a material that did not lend itself well to twisting into forms of any kind; also, the mold-covers being flexible it would have been difficult to attach any sort of device to the mold, unless the mark was in simple lines running parallel with the "laid" bamboos. In any event, the early Asiatic papermakers did not use watermarks; that is, not in the same technique as later employed in Europe. The Chinese have used an unusual form of marking paper with intricate designs of dragons, Buddhas and the like, but with a method unknown in the Occident and one that could not be adapted to the European methods of making paper, either by hand or machine.

The earliest European watermarks date from about 1270 A. D., or more than a century and a quarter after the introduction of papermaking into Spain. There is nothing difficult about

*(The largest size ever made by hand in Europe).

making a simple line watermark (Figure 11). The device is first drawn on paper and various sections of silver, brass, or copper wire are bent to conform to the design. These separate wires are then sewed, over and over, with very fine threadlike wire, to the "laid" wires of the mold-cover. Along the course of the wires, the stock, or pulp, is held thinner than in the body of the sheet of paper, thus causing a contrast in paper opacity. In all handmade papers a watermark is nothing more than various degrees of density.

While the ordinary line wire watermarking can be accomplished with but little knowledge and skill, the making of a "light and shade" watermark requires endless patience, ingenuity, and a thorough knowledge of various metals and materials. This form of watermarking paper was originated in England during the middle of the nineteenth century, but owing to the expense the method has never been employed widely. In producing a "light and shade" watermark (Figures 9 and 10), the first step is to model the portrait, against the light, in a sheet of wax. The original wax model can be executed only by a proficient sculptor; no mechanical means has been devised where sufficient depth can be achieved. The modeling of the original wax is eventually duplicated in the paper. After the wax image has been perfected so that the various degrees of lightness and density form a replica of the original painting, drawing, or photograph, the wax is ready to be electrotyped, thus forming two dies,—cameo and intaglio. A piece of finely-woven brass wire gauze is softened, then placed between the dies and subjected to pressure; the contours of the wax are impressed in the gauze. The gauze, placed in reverse, forms the mold-cover, and upon it the paper is actually formed, the paper reproducing the same light and shade of the wax model. While the depth of the wax sculpture is fully three-sixteenths of an inch, the paper, after being pressed between the felts, assumes an almost even thickness, although retaining all of the lightness and density of the wax. The illustrations of the molds (Figures 9 and 10) give a better conception of this complicated art than any amount of description. A portrait watermarking mold such as shown would cost close to a thousand dollars before any paper had been made upon it. Most of the watermarks in this intricate technique have been made as exhibition pieces, rather than for remuneration, as there is no demand for them commercially. While the method of making watermarks of this kind is entirely of western origin, the Japanese are perhaps most adept in this form of marking paper.

(1) Sir Aurel Stein on one of his journeys through Chinese Turkestan discovered several parcels of folded paper, which, upon examination, proved to be made partly from rag fibers. The date of these sheets was placed at about 150 A.D. Paper, dating from 250-300 A.D. was found by Dr. Stein in Nyia, in Turkestan. The earliest paper that is clearly dated was found by Dr. Sven Hedin at Loulan, the date being 264 A.D.

AGING OF PAPERS

▸▸▸ RESEARCH AT THE NATIONAL BUREAU OF STANDARDS has brought out further information on the effect of natural aging of papers on the condition of the cellulose of the fibers. Tests were made on two book papers about 200 years old, one of which was in very good condition while the other was in an extremely advanced state of deterioration. The former had good strength; it withstood 477 double folds when tested with the Schopper folding endurance tester. The other paper was so brittle that it cracked apart when folded once between the fingers. In its studies of the aging qualities of record papers, the Bureau has found that the relative proportion of the cellulose fractions, alpha-, beta- and gamma-cellulose, and the copper number of the cellulose, are of importance. The good cellulose of stable fibers is characterized by a high content of alpha-cellulose, low contents of beta- and gamma-cellulose, and a low copper number. Cellulose that is in a poor and unstable condition has a lower content of alpha-cellulose, a higher content of beta-cellulose, and a higher copper number. There is generally not a great difference in the gamma-cellulose of good and poor papers. In these two papers the extreme differences in the chemical condition of the cellulose are of much interest. The following respective values were found for the paper in bad condition and that in good condition: Alpha-cellulose, 19 and 87 per cent; beta-cellulose, 72 and 7 per cent; gamma-cellulose, 9 and 6 per cent; copper number, 13 and 2.

More Durable File Folders

The United States federal specification for the ordinary type of file folders has been revised so as to include a more durable folder. In many of the government offices, folders are required which must withstand considerable handling over a long period of years and, therefore, the paper must not only have high initial strength but must be chemically stable so that it will not become brittle in a short time. In recent years, folder stock made from kraft paper has come into considerable use, and investigation of such stock by the National Bureau of Standards showed that if properly made it fulfilled the requirements for very durable folders admirably. It has very high strength, and it was indicated by accelerated aging tests made by heating the paper that it would retain its strength satisfactorily on aging if care was taken by the manufacturer to keep its acidity low. Much of the paper of this kind is given a light bleaching treatment to improve its color and if this is not done carefully high acidity may result. Some folder stock having high acidity, equivalent to a pH of around 4.5, lost practically all of its folding endurance under the heat test, but with medium acidity, pH not less than 5.0, it generally retained 70 per cent or more of its folding endurance when heated. Therefore, for the new grade of folder, in addition to a high strength requirement, a pH value of not less than 5.0 is specified.

Switchgear Application

(Continued from page 1163)

the severity of the duty may be appreciated. In such locations the De-ion breaker should be considered. For ordinary duty the oil circuit breaker has been developed into an exceedingly reliable piece of equipment.

In conclusion, a brief statement of the features of metal-enclosed switchgear is desirable. These features may be listed as follows:

1) *Safety,* due to complete metal enclosure, relative inaccessibility of devices and conductors when they are energized, and provisions for convenient maintenance.

2) *Factory Assembly and Test* with a reduction in engineering and installation work in the field.

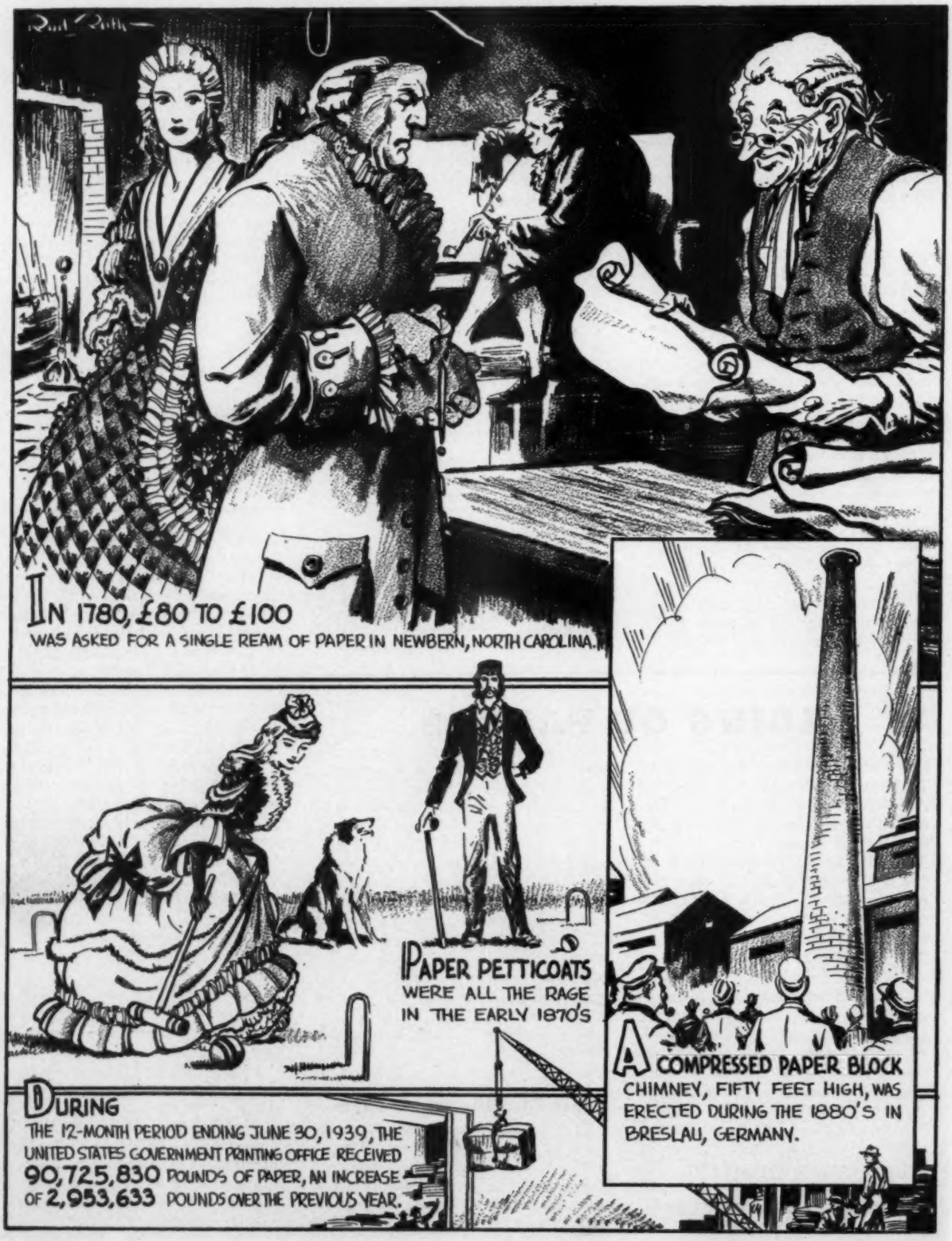
3) *Reliability,* due to the use of highest quality insulation and isolation of various parts of the circuit from each other.

4) *Reduced Maintenance,* on account of complete insulation of conductors and convenient removal of circuit breaker unit.

5) *Overall Cost Saving* where all factors of first cost, installation, and operation are taken into account.

That the various features are recognized is shown by the increasing number of paper mills which are specifying metal-enclosed switchgear for new installations as well as replacement of existing equipment.

PAPER SKETCHES


IN 1780, £80 TO £100
WAS ASKED FOR A SINGLE REAM OF PAPER IN NEWBERN, NORTH CAROLINA.
PAPER PETTICOATS
WERE ALL THE RAGE
IN THE EARLY 1870's
A COMPRESSED PAPER BLOCK
CHIMNEY, FIFTY FEET HIGH, WAS
ERECTED DURING THE 1880'S IN
BRESLAU, GERMANY.
DURING
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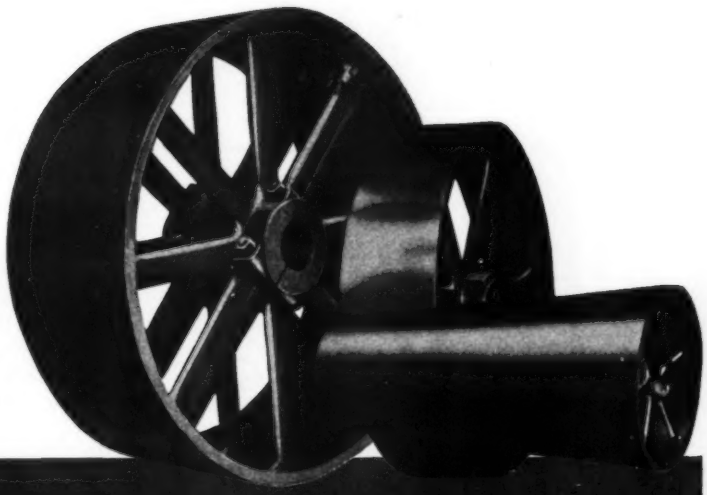

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ASSOCIATIONS

Canadian Association

Holds Highly-Successful Meeting

▸▸▸ ON WEDNESDAY, January 24 the Canadian Pulp and Paper Association's Technical and Woodlands sections gathered at the Mount Royal Hotel in Montreal. The twenty-sixth annual session of the Technical Section opened in the Ball Room while the twenty-second meeting of the Woodlands Section started in the Salle Doree. The twenty-eighth meeting of the parent association was slated for Friday, January 26, at the Pulp and Paper Research Institute on McGill University Campus.

Mingling with the leading executives, technical men and woods managers of Canadian mills were many distinguished visitors from the United States. The guest of honor was President D. C. Everest of the American Paper and Pulp Association, who was accompanied by his new secretary, E. W. Tinker. R. G. Macdonald represented T.A.P.P.I. and H. E. Brinckerhoff the American Pulpwood Association. Frank Hayward, Jr., appeared as a champion of the South from the Southern Pulpwood Conservation Association. The veteran, R. S. Kellogg, and W. G. Macnaughton represented the Newsprint Service Bureau. Other prominent American visitors included A. E. Bartlett, Algonquin Paper Corporation; D. C. Porter, Kimberly-Clark Corporation; W. S. Tilley, Maine Seaboard Paper Company; L. S. Lister and B. E. Claridge, Hammermill Paper Company; J. V. Martin, Munising Paper Company; Francis Kiefer, Port Huron Sulphite and Paper Company; Thos. H. Crawshaw, Finch Pruyn Company; Russell I. George, West Virginia Pulp and Paper Company; and a number of representatives of manufacturers and consultants serving the pulp and paper industry, including H. A. Morrison, Oliver United Filters, Inc.; J. Markley and H. Bauer, The Bauer Bros. Company; D. Manson Sutherland, Jr., Sutherland Refiners, Ltd.; Andreas Christensen, Fibre Making Processes, Inc.; Eric Lagerloef, Lagerloef Trading Company, Inc.; H. R. Wemple, Texas Gulf Sulphur Company; and C. D. Demers, Taylor Instrument Companies.

The Forest Service of Canada was represented by T. A. McElhanney, superintendent Forest Products Laboratories of Canada; Dr. H. W. Johnston, officer in charge of the Montreal Laboratories, and staff members from both Ottawa and Montreal laboratories, in-

A large gathering made merry at the Association banquet, held in the ball room of the Mount Royal Hotel on Friday night.

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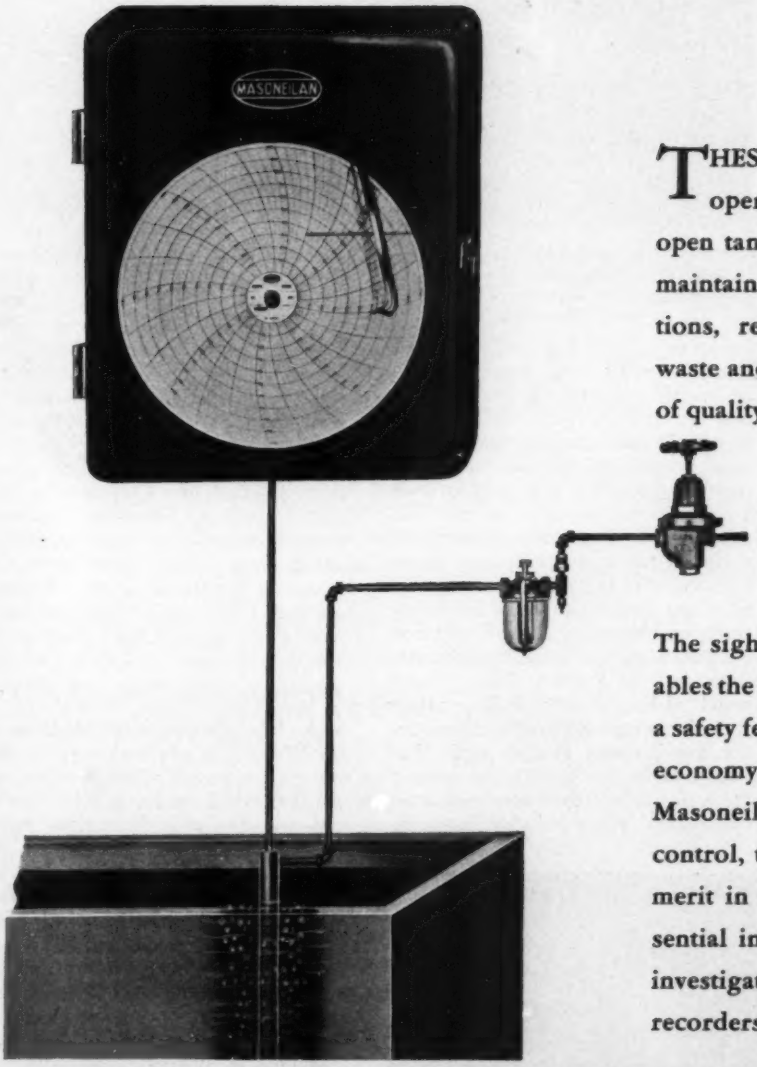

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cluding C. Heimburger, J. D. H. Hale, J. B. Prince, E. S. Fellows, F. H. Yorston and W. B. Beazley. The Department of Agriculture sent A. W. A. Brown, R. E. Balch and A. B. Baird from the Division of Entomology. The C. P. P. A. staff were represented by the secretary-manager, A. E. Cadman, A. Koroleff, forester; Dr. W. Boyd Campbell, technical adviser; Dr. R. Demontigny and W. C. Lodge.

Provincial forest services were represented by E. C. Manning, chief forester of British Columbia, G. L. Miller of New Brunswick and G. W. I. Creighton of Nova Scotia. The Quebec minister of Lands and Forests was unable to attend, but was represented at the annual dinner by the Provincial Treasurer, J. A. Mathewson. Dr. S. J. Cook represented the National Research Council. McGill University was represented by Dr. Otto Maass, director of chemistry, and Dr. H. Hibbert, professor of industrial and cellulose chemistry.

▸▸▸ The Technical Section opened with a business session. After the reading of a brief financial report, the chairman of standing committees reported on activities during the past year. The drafting of specifications for sulphite pulp had been referred by the board committee to the sulphite committee, which in turn had asked the committee on testing and physical standards and the staff at the Pulp and Paper Research Institute in Montreal to study complaints by users about testing methods in use. The Testing and Physical Standards committee had drafted a number of tentative testing methods which after due consideration would be issued in a manner similar to the Data Sheets now issued by the engineering committee. The engineering committee has arranged with T. A. P. P. I. for data sheets issued by either organization to be made available to members of both T. A. P. P. I. and the Technical Section. Wood handling problems are being studied and fan and compressor performance will also be studied with a view to further data sheets. The newsprint committee is studying the evaluation of paper formation, means for increasing brightness, development of a standard white color for newsprint, printability of newsprint and its evaluation by a new smoothness tester developed in Sweden. The groundwood and sulphite and fine papers committees had prepared symposia for the meeting and several papers had been contributed by the waste committee acting in collaboration with other committees. The wood chemistry committee contributed two reviews, one on advances in wood chemistry and the other on advances in utilization of lignin from sulphite waste liquor. Reports were received from the heat and power committee, the recently reorganized alkaline pulping committee, the Ottawa Valley Branch of the Section and the newly organized Niagara Branch.

F. G. Robinson, vice pres. Canadian International Paper Company, newly elected president of the Canadian Pulp and Paper Association.

The first paper was delivered by J. N. Stephenson, editor of *Pulp and Paper Magazine of Canada,* and dealt with "Twenty-five Years of the Technical Section." Tracing the history of the Section, Mr. Stephenson pointed out that it was often confused with the Research Institute with which it cooperated closely but did not control. This paper paid a fitting tribute to the work of a quarter of a century and emphasized the importance of research as instanced by the Canadian standard freeness tester. R. S. Kellogg, referring to the Textbook, said that $57,000 was raised, $78,000 spent and $4,000 left in hand, a piece of "old deal financing," but even more important was the international co-operation of pulp and paper men all over the continent.

Dr. H. Hibbert, Professor of Industrial and Cellulose Chemistry at McGill University, Montreal, described recent advances in lignin chemistry which were giving some usable information as to the structure and origin of lignin. The possibility of obtaining more effective utilization of lignin by new pulping process which did not degrade lignin so severely was stressed.

▸▸▸ The opening joint luncheon of the Woodlands and Technical Sections was an impressive affair. A record attendance filled the Normandie Roof to capacity. The wall decorations representing scenes from the history and daily life of Normandy formed an effective background to the large Union Jack and Stars and Stripes which hung together as twin symbols of more than one hundred and twenty-five years of peace and international co-operation. Toasts to the health of the King and the President of the United States were proposed in turn by E. M. Little, retiring chairman of the Technical Section, after which, according to British custom, smoking at table was permitted.

In a masterly address the guest of honor, D. C. Everest, president of the American Paper and Pulp Association, forecast the probable trend of the pulp and paper industry in North America during the present war and the period of readjustment which must inevitably follow. He said it is not improbable that one-third of the world's pulp supply would be cut off or diverted from

This friendly four registers proof that a good time was had by all in Montreal. (L to R)—J. N. Stephenson, editor, "Pulp and Paper Magazine of Canada;" R. S. Kellogg, Newsprint Service Bureau, New York; Geo. S. Carruthers, president Interlake Tissue Mills, Ltd.; and T. L. Crossley, consultant, Pangaro Corp., Ltd.

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SEAMLESS STEEL TUBES

No, they're not homesick, even though they may look about ready to harmonize on "The Sidewalks of New York." These four prominent association executives from New York had a grand time at the Canadian association meeting in Montreal. (L to R)—R. S. Kellogg and W. G. MacNaughton of the Newsprint Service Bureau; R. G. Macdonald, secretary of TAPPI; and E. W. Tinker, the American Paper and Pulp Association's new executive secretary.

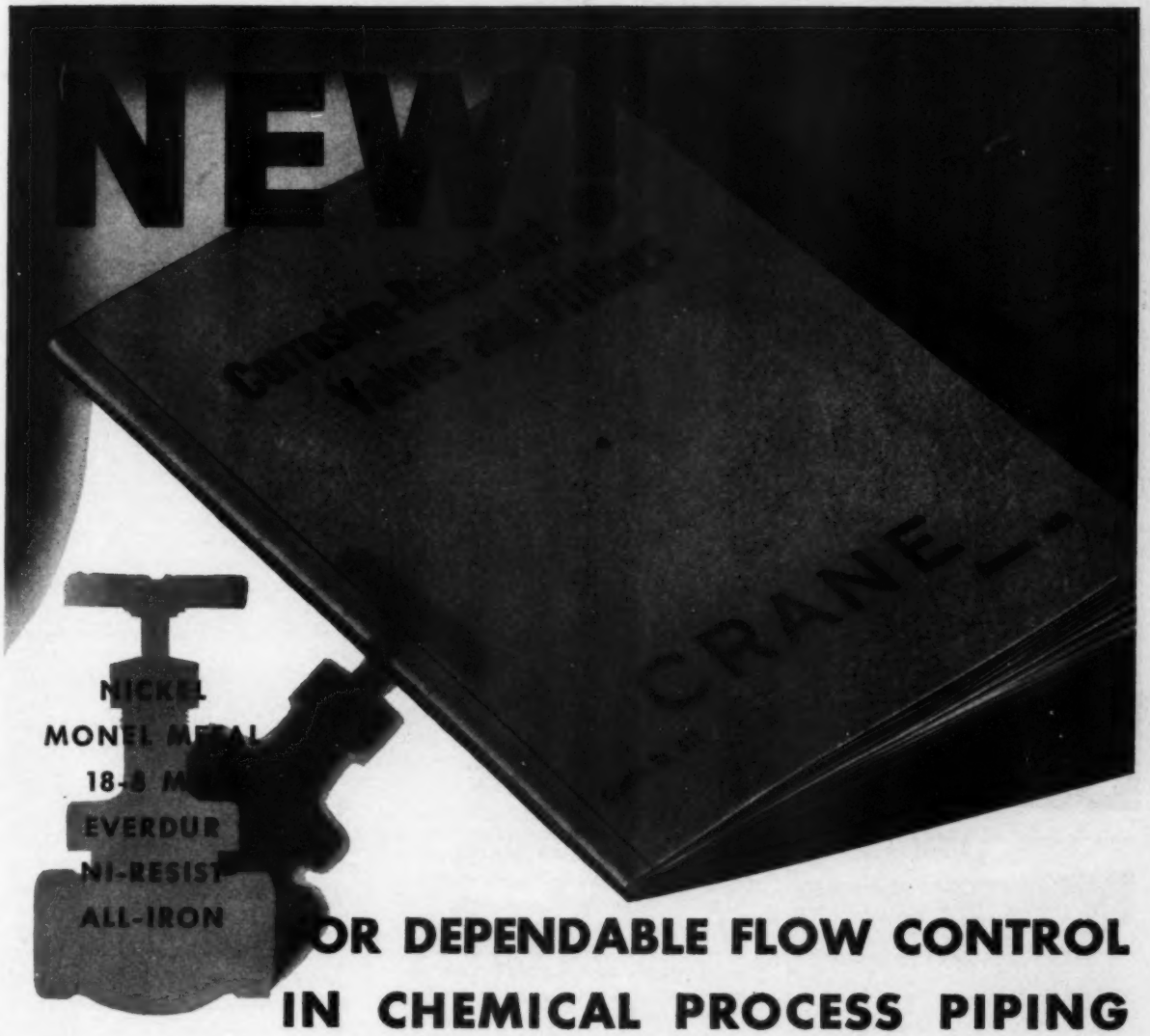
its normal market as a result of the war in Europe, and the United States as a large importer of pulp would have to seek supplies nearer home. The combined forest resources of the United States and Canada would permit the necessary expansion in production to be made, but the manner in which this expansion would be reached is most important if serious dislocation during the post war period is to be avoided. Shortage of supply could easily result in spiraling of prices and bring about overexpansion in equipment and economic waste, the usual accompaniments of boom conditions. When the war is ended the nations of Europe would need imports for reconstruction and pulp exports would figure largely in their search for credits on this side. Thus there was the danger that the advent of peace would find large stocks on hand in Canada and the United States and the sudden re-entry of European competition would throw overexpanded industries into part-time operation, causing unemployment and a business slump. Expansion should be kept to a minimum and be based rather on the probable local market after the war than on a passing phase. No expansion should be undertaken until all existing capacity had been fully absorbed and modernized. The speaker was optimistic for the future if the industry exercised caution. It has been often said that in time of peace one should prepare for war; today when war effort has turned the economic life of a nation into new but temporary channels it is even more necessary to say "in time of war prepare for peace" because only by such preparation can an enduring peace be brought about.

The afternoon session of the Technical Section was devoted to mechanical pulping, with G. E. Shipman of Donnacona Paper Company, Ltd., in the chair. D. D. Carr-Harris of Anglo-Canadian Pulp & Paper Mills, Ltd., read a paper on "The Reduction of Sulphite in Newsprint," based on studies of fiber-length, drainage time, bulk and strength, and the effect of wood species and per cent of sulphite. A paper by H. Andrews, Powell River Pulp and Paper Company, Ltd., B. C., was read by Dr. J. Edwards, Price Bros. & Company, Ltd., on the "Effect of Grinding Consistency and Temperature Using a Miniature Grinder." A grinder similar to that at the Pulp and Paper Research Institute in Montreal was used for the experiments.

Dr. R. Demontigny of the Pulp and Paper Research Institute staff in Montreal, in a paper called "The Effect of White Water Loss in the Testing of Mechanical Pulp," showed no serious error resulted from loss of fines in forming sheets. A paper by Bruno L. Koskinnen of Manitoba Paper Company, Ltd., described results obtained by classification in a newsprint mill. J. D. Brown, of Canadian International Paper Company, gave some "Practical Hints on Mechanical Pulping for Newsprint" which constituted an excellent review of modern practice in grinding and its relation to machine operation.

The afternoon session of the Woodlands Section opened with a short business session followed by an address by R. A. McInnis, president of the Canadian Pulp and Paper Association. Paul Kellogg of Stevenson and Kellogg, Ltd., then gave an address on "The Effect of War Conditions on the Pulp and Paper Industry." This was followed by a paper by J. V. Martin, Munising Paper Company, on the "Further Consideration of Pulpwood Evaluation," including estimation of the accuracy with which average diameter and solid content in a cord could be determined at the mill and in the woods. R. S. Armitage spoke on "Trends in Pulpwood Costs" based on his experience with Price Bros. & Company, Ltd. The session closed with a paper by J. W. Sutherland, Canadian International Paper Company, on "Care and Stabling of Woods Horses."

Two well-known men in the industry; one from the States and one from Canada, look at the future with guarded optimism. D. C. Everest (left), president of the American Paper and Pulp Association, confers with H. Crabtree, president of Howard Smith Paper Mills, Ltd., on timely subjects of interest to both of them.



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In the evening the Technical Section Council and committee chairmen held a dinner meeting to discuss the program of the Section.

▶▶▶ On Thursday, January 25, the Technical Section session on sulphite pulping opened with J. D. Hyndman of Anglo-Canadian Pulp & Paper Mills, Ltd., in the chair. L. C. Kelley, British Columbia Pulp and Paper Company, Ltd., contributed a paper on "Forced Digester Circulation and Chip Packing," which summarized existing practice in the sulphite industry. H. Mason, Anglo-Canadian Pulp & Paper Mills, Ltd., discussed "The Recovery of Heat in Sulphite Mill Operation." The relative merits of several methods of heat recovery were discussed. The session ended with a paper by H. Green and Dr. F. H. Yorston, of the Forest Products Laboratory in Montreal, on "The Effect of Chipping on the Suitability of Wood for Sulphite Pulping."

The Woodlands Section opened with a paper by J. L. Kelly, Price Bros. & Company, Ltd., on "Sectional Steel Chutes for Pulpwood." E. E. Grainger, C. P. P. A., dealt with "Portable Pulpwood Slashers." A. Koroleff, Forester, C. P. P. A., discussed "Pulpwood Cutting (Technique and Equipment)," while L. A. Nix, chairman-elect of the Woodlands Section, dealt with "Woods Labor." Frank Heyward, Jr., of the Southern Pulpwood Conservation Association, described "The Trend of Forest Conservation in the Southern Pulpwood Industry." This paper aroused considerable interest and helped to create a better understanding of the possibilities and limitations of the Southern Forest Region as a source of pulpwood. Elwood Wilson, Shawinigan Water and Power Corporation, pointed out that increasing industrialization would raise wages in the South and expanding demand would raise the cost of pulpwood. Although the time to maturity of some Southern species is much less than that of spruce or balsam in Canada, the increment in cubic feet per acre per annum is very little greater for Southern woods. On account of the superior pulping properties of spruce and balsam Canadian mills need not fear displacement provided proper forest management based on a long cycle is provided and maintained. The session concluded with a paper on "Operating Costs as Related to Depletion Charges," by W. F. McColm, Price Bros. & Company, Ltd.

▶▶▶ The guest speaker at the joint luncheon of the Woodlands and Technical Sections was Dr. Cyril F. James, who succeeded Dr. L. W. Douglas as principal of McGill University. The speaker pointed out that industrial specialists knew more about the technical details of business than a college professor can ever hope to know, but that the college professor was apt to be more familiar with the wider implications of particular problems. Both types of mind are needed for effective research. Scientists cannot be tied to a schedule like a railroad timetable; if the du Pont Company had tied its investigators to the solution of minor problems of practical detail Cellophane and Nylon would not have been discovered. The paper industry should make more use of research; a splendid beginning had been made in the Pulp and Paper Research Institute in Montreal and even more could be done by providing unified control, a more adequate budget under the Director's discretion and greater co-ordination of efforts. The significance of the pulp and paper industry is measured by its ability to provide cheap paper for books and newspapers, thus aiding greatly both learning and the dissemination of news.

In the afternoon a joint session of the Woodlands and Technical Sections was held, with E. M. Little, Anglo-Canadian Pulp & Paper Mills, Ltd., Chairman of the Joint Committee of the Woodlands and Technical Sections, presiding. The report of the joint committee was followed by papers prepared under its sponsorship. J. O. Wilson, Anglo-Canadian Pulp & Paper Mills, Ltd., delivered a "Report on Forest Inventories—Province of Quebec" and H. D. Ruthman of the same company spoke on "Reduction of Wood Inventories." A valuable contribution was made by J. B. Prince and E. S. Fellows, Forest Products Laboratories of Canada at Ottawa, in their paper "Some Economic Aspects of the Use of Saw-mill Waste for Chemical Pulp in Quebec and the Maritime Provinces." From the discussion which followed it is evident there is a growing realization that forest utilization requires the close co-operation of governments, settlers, loggers, lumber and pulp mills, in fact, all those whose living comes from the forest. The pulp mills, being fewer and larger than the lumber operators, are more easily organized, but the problem must be tackled on a large scale to achieve a successful solution. C. McMichael and R. J. McInnis, Anglo-Canadian Pulp & Paper Mills, Ltd., reported on "The Economic Possibilities of Using High Density Wood." K. D. Running summarized what is known about "Pulp and Paper Mill Utilization of Hardwoods and Other Little Used Species." L. C. Anderson presented an interim report on "Wood culling." E. R.

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Goulet reported on "Economics of Logging Various Pulpwood Lengths." A. Koroleff's paper on "Mechanization of Logging" was held over for Friday morning.

During the afternoon the board committee of the Technical Section and several others held special sessions, the board and testing sessions being open meetings.

On Friday, January 26, the Canadian Pulp and Paper Association meeting opened at the Pulp and Paper Research Institute. F. G. Robinson, vice president of Canadian International Paper Company, was elected president of the Association to fill the vacancy created by the retirement of R. A. McInnis, managing director of Anglo-Canadian Pulp & Paper Mills, Ltd., after four years of office.

V. E. Emory, Fraser Companies, Ltd., was elected chairman of the Technical Section, succeeding E. M. Little, Anglo-Canadian Pulp & Paper Mills, Ltd., who becomes ex-officio a member of the Council of the Technical Section. New members named to the council were: Howard Hyman, J. R. Booth, Ltd.; and G. J. Jaques, St. Lawrence Corporation, Ltd. Remaining members of the Council are: B. W. Scott, Consolidated Paper Corporation; H. S. Spencer, Howard Smith Paper Mills, Ltd.; I. H. Copeland, Canadian International Paper Company; and E. D. Hyndman, Anglo-Canadian Pulp & Paper Mills, Ltd.

L. A. Nix, Bathurst Power and Paper Company, Ltd., was elected chairman of the Woodlands Section, succeeding V. E. Johnson, Canadian International Paper Company, who becomes a member of the Council of the Woodlands Section ex-officio. New members of the Council were R. G. Macfarlane, Fraser Companies, Ltd., and J. V. Perrin, Brown Corporation, Ltd. Remaining members are W. G. Wright, Price Bros. & Company, Ltd., vice chairman; F. Faure, Consolidated Paper Corporation; E. B. McGraw, Ontario Paper Company, Ltd.; G. W. Phipps, Spruce Falls Power and Paper Company, Ltd., and H. G. Schanche, Abitibi Power and Paper Company, Ltd.

The morning session of the Technical Section was devoted to waste utilization under W. B. Scott, Consolidated Paper Corporation, as chairman. K. S. Lebaron, Canadian International Paper Company, presented an "Interim Report on Refuse Disposal." F. A. Soy, Price Bros. & Company, Ltd., prepared a paper on "Waste Into Production in Newsprint Operation." R. J. Chambers, Gaspesia Sulphite Company, Ltd., read a paper on "Dryer Waste Heat Recovery."

(Concluded on page 1183)

Convention Papers . . .

The accompanying digests are of papers presented at the annual meeting of the Canadian Pulp and Paper Association, held in Montreal, Que., January 24-26.

Slime Control at the Ontario Paper Co., Ltd.

J. M. FORRESTER and E. G. KIRBY, Ontario Paper Co. Ltd.

It was proven experimentally that with sufficient treatment by chlorine and ammonia in the form of chloramine the growth of various types of bacteria found in the paper mill could be effectively controlled.

Savings include the increase in production of finished paper due to higher machine efficiencies, reduction of stock losses and labor costs by elimination of groundwood decker washups and curtailment of stock chest and pipe line cleanups; in power and steam consumption through the increased paper machine efficiencies.

Practical Hints on Mechanical Pulping for Newsprint

J. B. BROWN
Canadian International Paper Co.

The objective in grinding for newsprint is to approximate mechanically as nearly as possible what is done by the chemical process; that is, to free the fiber in the wood from its cementing bond and in so doing to damage it as little as possible. So far, standard practice produces results very wide of the mark. If for different grades of paper, different sizes of fiber and filler are desirable, this can all be achieved by subsequent processing, and we should not be limited to different sizes of fiber and filler under all circumstances whether we like it or not. Groundwood technique has not progressed very far past this stage to date.

In the manufacture of groundwood today, more than ever before, there necessarily must be maintained a degree of efficiency and control of product that is commensurate with the demands for improvement of paper on the part of the publishers. The maintenance of advertising volume is in some measure dependent upon the quality of paper required for clear and sharply defined prints and reproductions, and the paper industry, in its own interests, should leave no stone unturned in helping the publishers solve a very difficult problem.

Effect of Grinding Consistency and Temperature Using a Miniature Grinder

H. ANDREWS
Powell River Company, Limited

Utilizing a miniature grinder, a study has been made of the effect of the grinding consistency and temperature in the mechanical pulp process. It is indicated that at consistencies over 5 per cent erratic results were secured, so no data are given with respect to the effect of consistency. The effect of temperature is shown at 5 per cent consistency on production, on power, and on pulp characteristics with a test procedure to allow of interpretation of results at the same freeness of pulp for the grinding temperatures of 132 deg. Fahr., 152 deg. Fahr. and 172 deg. Fahr. With a constant freeness of pulp produced, for increase in grinding temperature to 172 deg. Fahr. over 132 deg. Fahr. production decreases, no change in power, mullen increases, tear and bulk increase slightly, the "long" fiber fractions increase and the "fines" decrease slightly.

Mechanization of Logging Operations

A. KOROLEFF
Forester, C.P.P.A.

Logging is strenuous work. Its conditions unavoidably handicaps the productivity of men and horses. The introduction of logging mechanization in Eastern Canada has been slow. Its judicious speeding up would reduce the cost of wood production. If properly integrated with the requirements of forest management this movement should be of great economic benefit not only to our industry but to the whole country. Proper ways and means can best be found through planned co-operative effort, with the assistance of research and experimentation. An early meeting of general executives from the industry with woods managers, engineers and other appropriate consultants —under the auspices of the C.P.P.A.—is suggested, to consider greater mechanization of woods operations and to decide upon policy and plans regarding collective effort. War conditions, if prolonged, will accentuate this need.

The Effect of White-Water Loss in the Testing of Mechanical Pulp

W. S. MORRIS and R. DE MONTIGNY
Canadian Pulp and Paper Association

Tests have been made on eighty-four groundwood pulps using handsheets made by the standard procedure established by the British Pulp Evaluation Committee and also by a modified method which eliminates loss of fine material. With the exception of drainage time, differences are not large enough to affect routine testing in mill operation and correlation of properties is not improved. Those species of wood yielding low strength pulps of high freeness associated with high percentage of fine material show the largest differences.

The differences in the properties of pulp handsheets made by the standard or the modified or whole-pulp methods were not large, exceeding 10 per cent only in the case of jack pine, white birch, and the hemlocks. The largest differences appear to be associated with those species of wood which

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give low strength pulps showing high freeness together with high percentage of fines. On the whole, the differences are not sufficiently large to invalidate the standard tests as control methods in mill operation, since, with the exception of tearing strength, errors are undirectional and fairly constant in magnitude over a wide range.

With respect to testing for research purposes, the modified method does not appear to offer any marked advantages other than slightly better accuracy. Correlation of pulp properties with grinding conditions or intercorrelation of pulp properties does not seem to be improved by using values obtained on whole-pulp handsheets in preference to those measured on standard sheets.

Forced Digester Circulation and Chip Packing

L. C. KELLEY, British Columbia Pulp and Paper Company, Ltd.

Definite savings due to chip packing are obtainable if proper advantage can be taken of them. If the rest of the plant can handle the increased yield, the dollar and cents saving from the increased tonnage per day with the same labor, overhead, etc., it is merely a matter of arithmetic to figure out. If only partial advantage can be taken of increased production, then a longer cooking time can result with its attendant inherent raising of quality of finished product.

Chip packing without forced circulation does result in an increase in screenings. The combination of the two would eliminate this, and for an approach to that Utopia in the digester house that every sulphite superintendent yearns for, the author unreservedly recommends chip packing with a steam packer, forced circulation with indirect heating and hot acid.

The Effect of Chipping on the Suitability of Wood for Sulphite Pulping

H. GREEN and F. H. YORSTON, Forest Products Laboratories of Canada

Chips prepared in several sulphite pulp mills were found to contain ten or fifteen per cent of wood which had been subjected to high compressive stress. The situation of the damaged wood in the chip showed that the greater part of the damage had taken place during chipping. Presence of stressed wood in the chips does not affect the yield or the bleachability of the pulp, but does cause appreciable loss of strength.

The degradation of wood caused by chippers as currently operated need cause no concern to mills which find the strength of their sulphite pulp adequate for the purposes for which it is to be used. If, however, it is desired to improve the strength of the pulp, some investigation of the chipping process might well be made. Factors which might be studied in this connection include the moisture content and temperature of the wood as chipped, the adjustments and speed of operation of the chipper and possibly the nature and magnitude of the stresses necessary to cause fiber degradation when the stressed wood is cooked.

The Effect of War Conditions on the Pulp and Paper Industry

PAUL KELLOGG
Stevenson & Kellogg, Ltd.

War-time conditions will probably make it more difficult for the Scandinavian countries to ship wood pulp to the United States and in consequence Canadian producers of pulp should be able to increase their exports of pulp across the Southern border very considerably. At least 200,000 additional annual tons of pulp will have to be imported into the United States and possibly much more may be required. The newsprint industry in Canada will probably expand and the export of newsprint to the United States from Canada should rise by at least 10 per cent.

Canadian Association

(Continued from page 1180)

The morning session of the Woodlands Section dealt with logging. J. N. Fitzgerald, E. B. Eddy Company, Ltd., spoke on "Jobbers Camps." Papers on "Skidding with Tractor and Sulky" were presented, followed by a discussion on "Cable Skidders." A. Koroloff, Forester, C. P. P. A., spoke advocating the "Mechanization of Logging Operations." The session ended with a "Reference to Pacific Coast Logging" by E. B. McGraw, Ontario Paper Company, Ltd.

▶▶▶ The speaker at the joint luncheon was the retiring president of the C. P. P. A., R. A. McInnis. Introduced by a past president of the Association, Brig.-Gen. J. B. White, D. S. O., E. D., who acted as chairman and proposed the toasts to the King and the President of the United States, Mr. McInnis delivered one of the masterly addresses for which he was famed during his four years of office. Complaining that he had had to rewrite his speech twice, first after D. C. Everest's address on Wednesday and then after Principal James' speech the next day, Mr. McInnis pointed to the ever increasing demand for paper and paper products in the United States, in Britain and in European countries as indicating possibilities of large but sane expansion in the marketing of newsprint, board and other pulp and paper products from Canada, even after making due allowance for the reopening of European exports and the development of pulpwood limits in the South. Mr. McInnis re-echoed the warning of Mr. Everest that expansion should be controlled and related to ultimate post-war markets.

After luncheon the Technical Section presented a symposium from the Fine Papers Committee under H. S. Spencer, Howard Smith Paper Mills, Ltd., as Chairman. J. M. Forrester and E. G. Kirby, Ontario Paper Company, Ltd., read a paper on "Slime Control at the Ontario Paper Company, Ltd." J. C. Rogers, Fraser Companies, Ltd., presented "The Process of Printing-Report Compiled for the Fine Paper Committee." Dr. W. B. Beazley, Forest Products Laboratory in Montreal, presented a paper "The Measurability of Printing Quality."

The Woodlands Section dealt with entomological and bacteriological problems in its afternoon session. Dr. A. W. A. Brown read a paper by himself and Dr. J. J. deGryse, of the Division of Entomology, Department of Agriculture. R. E. Balch, Division of Entomology, described "The Spruce Sawfly Outbreak in 1939." A. B. Baird reviewed the spruce sawfly, a parasite situation. C. Heimburger and A. W. McCallum, Dominion Forest Service and Division of Botany and Plant Pathology, Department of Agriculture, brought the session to a close with a paper on "Balsam Fir Rot in Relation to Some Site Factors."

▶▶▶ In the evening the annual industry dinner was held in the ball room on the ninth floor of the Mount Royal Hotel. The evening was a merry one, but the shadow of the war cast itself across the festal board and made the diners less exuberant than in former years, although their appreciation was undiminished. Under the direction of Jimmy Rice, master of ceremonies, a special orchestra, led by Billy Eckstein, discoursed sweet music, sad music, swing and the old war songs of 1914-18. A rapid-fire vaudeville "oleo" with everything from acrobats to hootchy-coochy put on fifteen acts, during which the audience applauded wildly but behaved most decorously. The six Saguenay singers gave their rendering of "Alouette" and other old French chansons from field, river and shanty. A war-time pipe band from the Black Watch of Canada, by special permission of the Officer Commanding, rendered Scottish music and dances, including a sword dance, highland fling and reels. Finally, as a special treat, Lieutenant "Gitz" Rice, well-known composer of "Dear Old Pal o' Mine" and "Mademoiselle from Armentieres," came down from Toronto to lead the boys in these and other old war time favorites and wound up with his new war song "Hello, Hitler." Following an old custom there were no speeches and at the close of the evening after the singing of the National Anthem the pulp and paper convention was over.

ALLIED

D. J. MURRAY TAKES OVER UNIT HEATER

The Unit Heater and Cooler Company, established in 1929 by the D. J. Murray Manufacturing Company as the sales organization for the "Grid" unit heater and cooler, has been entirely taken over by the parent company. This move has been made so that manufacturing and sales of the "Grid" unit may be continued in a larger and more effective way.

During the past ten years the "Grid" unit has been so well established and so closely associated with the Murray name that the parent company decided to simplify matters by dissolving the Unit Heater and Cooler Company and carry on the entire business under the Murray name, especially since this company has been manufacturing the "Murco" unit heater. The D. J. Murray company management states that several new projects and items are now in the making and will be announced later.

◆

NOPCO ANNOUNCES NEW DISCOVERY

A new method for reclaiming waxed paper formerly wasted because of manufacturing defects has been patented by the National Oil Products Company, Harrison, New Jersey.

The new emulsifier, trade-named "Ex-O-Wax," is claimed by the technical service department of Nopco to be a "solution to the problem of reclaiming waxed paper broke in the mill."

National Oil Products Company technicians report that the new method makes available high grade stock at low cost for improving the finished product and that the treatment is satisfactory for re-working the waxed waste in mills where a waxed size is of advantage in the finished paper since both the fiber and the wax may be re-used by mixing with fresh stock. They further report that if fibers alone are wanted by the finished stock, the emulsified wax can be separated by washing it free from the fibers.

◆

INDIA GOOD PAPER MACH'Y MARKET

Imports of paper machinery and component parts into British India have varied considerably during the past few years, according to a report in a recent issue of *World Machinery News*, a U. S. Department of Commerce publication.

During the fiscal year, 1936-1937, the report states, these imports amounted to Rs. 785,109 (one rupee equals $0.34). In 1937-1938 they advanced to Rs. 4,489,439 and then in 1938-1939 they declined to Rs. 2,766,549. During 1938-1939 imports from the United States amounted to Rs. 60,795. A large part of the imported machinery has been from Germany.

At present the imports of paper machinery will no doubt be limited to a minimum but, says the report, American exporters should be in an advantageous position for such a market as does exist. The principal types of replacements regularly required by paper mills in India are beater bed plates, beater bars, cylinder doctors, dry blades, guillotine knives, knives for cutter machines, shaft cutter knives, springs for cutter knives, perforated steel baskets for cells and carbon for cells.

The report further states that it is the consensus that a period of prosperity for Indian industries is certain, particularly in the event of a prolonged European war.

The Machinery Division of the U. S. Bureau of Foreign and Domestic Commerce now has available a list of several firms which might be prepared to represent American manufacturers and exporters of paper mill machinery and similar equipment, at least for the duration of the war.

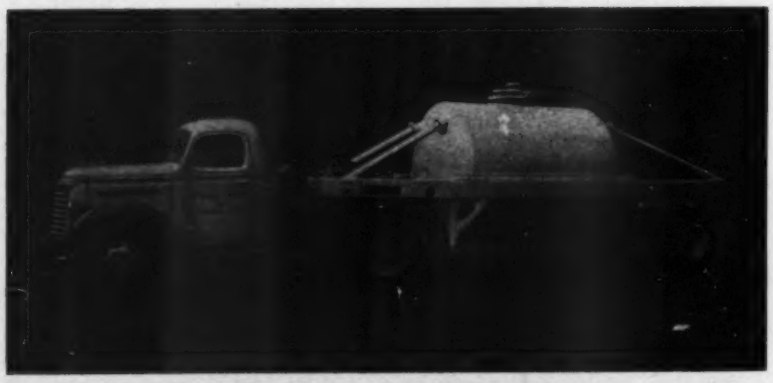
◆

LARGEST IMPORT SHIPMENT OF CLAY

Although the present war has impeded shipments of all kinds to and from Europe, it is said that since war was declared on September 3, 1939, the importation by this country of English china clays has increased rather than decreased. At present there is sufficient tonnage of clays from Great Britain available in the United States to meet the present demand and immediate future demands and there is no indication of any shortage.

Only recently 6,250 tons of Cornish clay, Cornwall stone and Ball clay were unloaded at the Maritime Terminal in Trenton, New Jersey. The load, brought here by various clay importers, was the largest cargo of its kind ever to be brought to the New Jersey port. It was pointed out at the time of the cargo's arrival that sufficient tonnage of these materials is being received to more than cover all normal requirements and that in the past few weeks similar loads had been arriving at various points along the Atlantic coast.

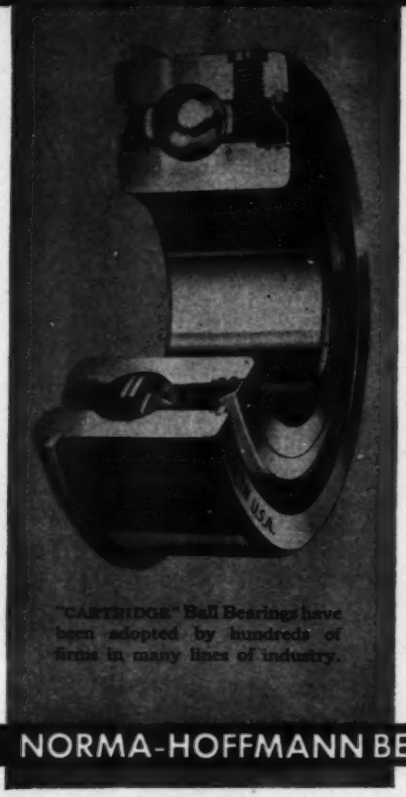
The ship bringing in this load of clays was the S. S. "Emmy," a Greek steamer which sailed from Fowey, England. The skipper, Captain Nicholas Vergotis, declared that the voyage was uneventful and satisfactory except for bad weather.



A 2500-gallon, rubber-lined tank

Transportation of chemicals in motor truck tanks is looming as one of the important potentials in this field, authorities are pointing out. The American Cynamid and Chemical Corporation has recently placed two truck tanks of the type shown here in service handling a corrosive solution. Of 2500 gallon capacity, the tanks have been lined with rubber by The B. F. Goodrich Company, Akron, Ohio, using its patented Vulcalock process of adhering rubber to metal, and the Triflex method of construction. Previously, for the same service with the same company, Goodrich had lined a 2150 gallon truck tank. The tanks are built on a special trailer.

DOUBLE YOUR GREASE CAPACITY—SIMPLIFY DESIGN—with



"CARTRIDGE" Ball Bearings have been adopted by hundreds of firms in many lines of industry.

"Cartridge" Ball Bearings

(Patented)

SOME OF THEIR ADVANTAGES:

Can be packed with at least 100% more grease than any self-sealed bearing—especially adapted, therefore, for continuous service for long periods.

Provide positive protection against foreign matter and absolute retention of lubricant—by the use of flanged metal shields, recessed inner ring construction, and two or more grease grooves—the combination affording a truly effective labyrinth.

Are equally efficient in retaining grease in horizontal or vertical position.

Metal shields, though rigidly locked by snap rings, are removable to facilitate inspection, cleaning or re-greasing of bearings.

Can be quickly regreased, either through "built-in" refilling plug opening or by removing metal shields.

Require no lock nuts on shaft or clamping means in housing, because of wide contact areas due to double-row width of both rings—which also prevent "cocking", slippage or "peening".

Reduce costs by simplifying design, eliminating protective closure parts, and saving attendant labor.

Available with shoulder ring, thus permitting a through bore in housing, the shoulder ring providing endwise location.

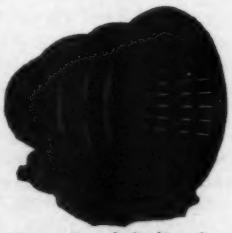
NORMA-HOFFMANN BEARINGS CORPN., STAMFORD, CONN. U.S.A.

Write for Catalog F-951 on Cartridge Precision Ball Bearings

MURRAY

WOODROOM AND PAPER MILL EQUIPMENT....

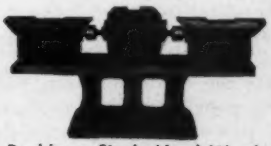
Our engineering services are always available to help you solve your mill problems. Write for information on our new complete line of wood cleaning equipment.



Murray-Branch Barking Drum

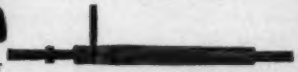
New Murray Knot Drill

Murray Pulpwood Chipper



Double or Single Head Wood Cleaner

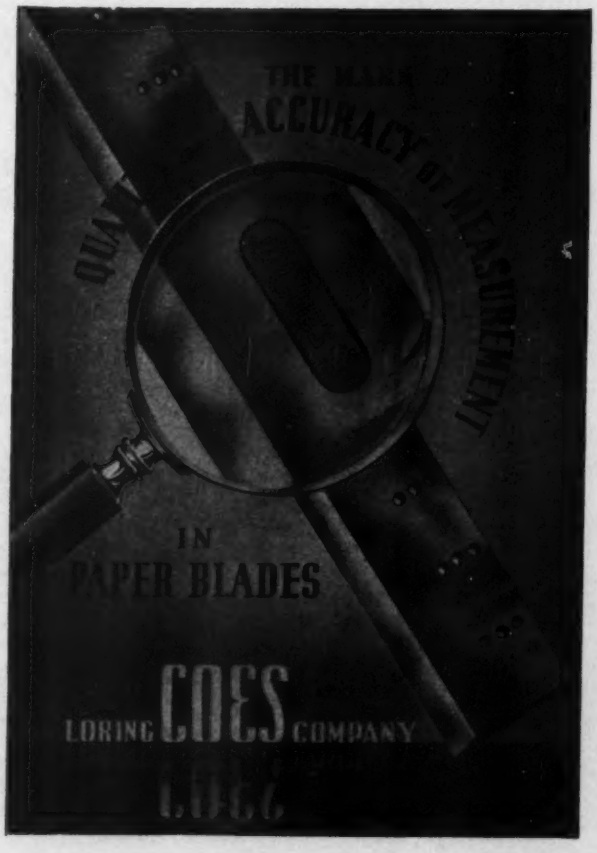
Murray High-Speed Hammer Chip Crusher



Collapsible Winder Shafts

D. J. MURRAY MFG. CO.

WAUSAU, WISCONSIN



FOSTER SNELL'S MEN CARRY OWN LABORATORIES

When, in the course of their inspection trips, Foster D. Snell trouble-shooters find a few problems which need laboratory work but can't be taken to the company's New York laboratory, it doesn't worry them one bit. They just take the laboratory to the problem.

To meet problems at the time and place of their origin, Foster D. Snell, Inc., recently introduced a portable laboratory (shown in the accompanying illustration) which weighs 45 pounds and which measures 24 inches by 19 inches by 8 inches. In a case of light but strong construction are housed microscope with accessories, hygrometer, drying oven, ringstand with rings, and clamps, beakers and flasks, a small balance, graduated pipets for titrations, filter funnels, paper, wash bottle, stopwatch, and many miscellaneous accessories. Heating with an alcohol lamp is provided.

While originally designed by Theodore M. Miller of the staff for use in trouble shooting in clients' plants, the unit has proved so successful that one engineer has carried it on factory inspection trips of three and four weeks' duration and reported that the usefulness fully justified any fatigue resulting from its transportation.

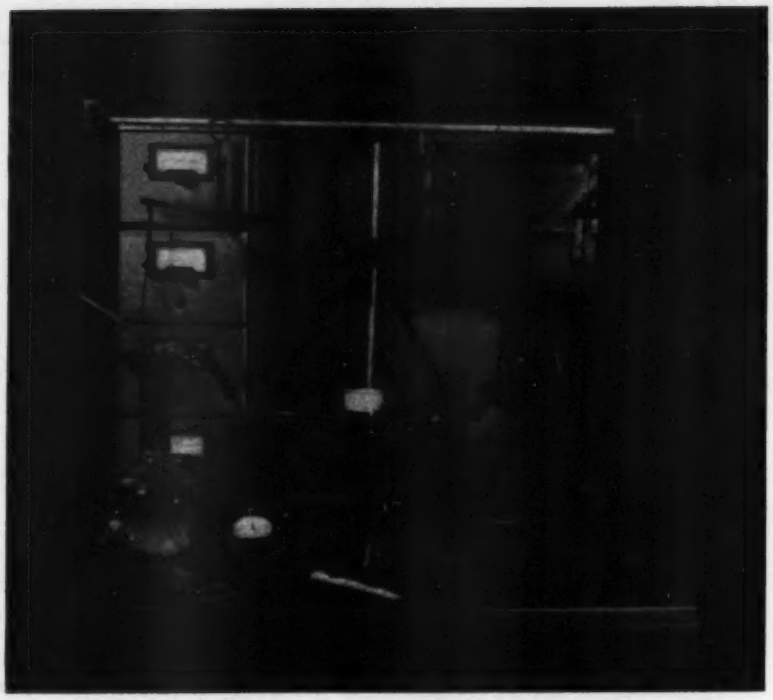
◆

ALLIS-CHALMERS SEEKS '40 GRADS.

College graduates of 1940 will be heartened by some cheerful news revealed recently by Walter Geist, vice president of the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin. Mr. Geist pointed out that more than fifty large industrial concerns will send "talent scouts" to the leading universities and technical schools between now and the end of May to sign up graduates before they leave the campus.

Mr. Geist, who heads his company's graduate training course, stated that big improvement in the prospects for this year's graduating class is evident already in the way numerous companies are scheduling student interviews earlier than ever in the school term. Allis-Chalmers plans to cover twenty of the leading colleges during February and March. Success of the company's training course is revealed by the fact that in 35 years Allis-Chalmers has found it necessary to terminate contracts of less than one per cent of the graduate students after signing them up for the course.

"Once a place on the payroll is won," said Mr. Geist, "it isn't really necessary to marry the boss's daughter to get ahead. This shows up in our own student records covering more than a quarter of a century. Despite a deplorable lack of officials' daughters here, scores of executive posts in this company are held down by men who first started in our graduate training course."



A "lab" that goes trouble shooting.

◆

BLACK LIQUOR TUBE DATA NOW AVAILABLE

A new specification which prescribes the requirements for black liquor evaporator tubes has been just released by the Steel and Tube Division of the Timken Roller Bearing Company, Canton, Ohio.

Actual working data was used by the Timken metallurgists to prepare this specification. The data, secured from many paper mills throughout the United States and Canada, establishes to definite limits the chemical composition of several popular alloy types together with provisions for check analyses and tolerances. It specifies hardness, flaring and hydrostatic testing requirements.

A schedule set-up shows the number of each of the various tests required and methods of testing used by the mill inspection and metallurgical departments before tubes are released to the customer. Copies of these specifications are available upon request.

LINDSAY WIRE'S GROWTH TRACED IN NEW BOOKLET

"The Lindsay Wire Weaving Company—Its First 36 Years" is the title of a tasteful, well-printed booklet recently issued in Cleveland. The author is Harry H. Field, treasurer of the company who, since his self-appointed period of semi-retirement began in February of last year, has found time to complete his "labor of love." In a scope of 40 pages the writer traces the progress of the Lindsay organization from its one-building, six-loom beginnings to its present eight buildings and 64 looms with their capacity of 16 times that of the original facilities. An interesting narrative is interspersed with the comments and observations, mostly philosophical or droll, of a very human author.

◆

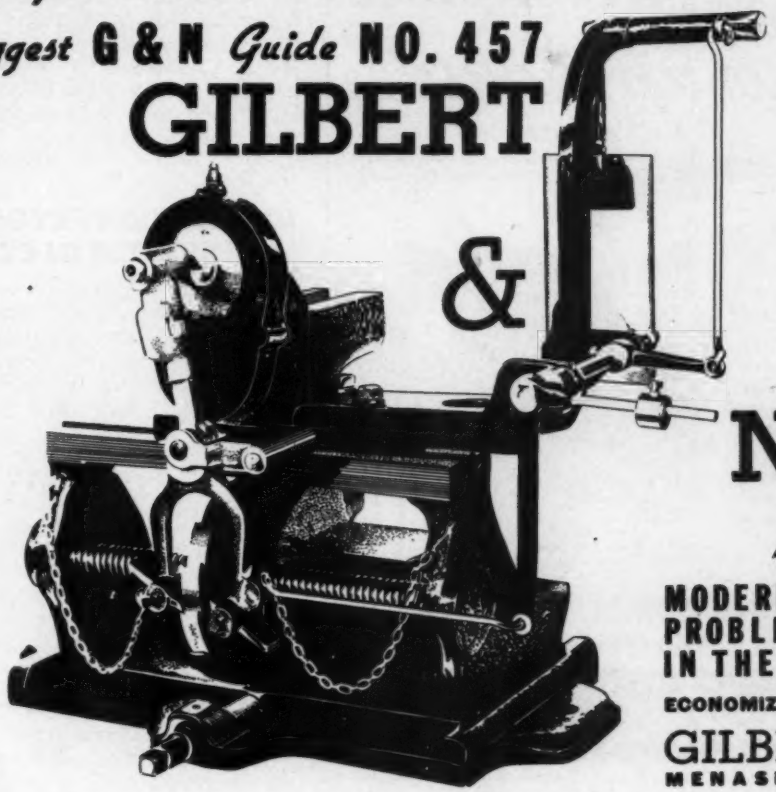
PENN. SALT WILL BUILD NEW PLANT

Two tracts of land totaling fifty acres on the Delaware River at Cornwells Heights, Pennsylvania, have been purchased by the Pennsylvania Salt Manufacturing Company as a site for its new $2,000,000 plant. The new plant will replace the present Philadelphia operations.

The company's Philadelphia site has been sold to the Philadelphia Electric Company in what was termed the largest real estate deal in ten years. The Pennsylvania Salt Manufacturing

For Your **WET FELTS** *We Suggest* **G & N** *Guide* **NO. 457**

GILBERT & NASH *Build*



MODERN GUIDES FOR ALL PROBLEMS ENCOUNTERED IN THE PAPER INDUSTRY.

ECONOMIZE by Guiding the Modern Way

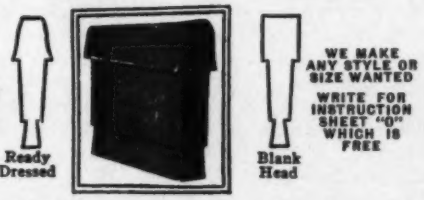
GILBERT & NASH

MENASHA - - - WISCONSIN

"READY DRESSED" MILL COGS

LABOR SAVING—TIME SAVING

THE MOST ECONOMICAL FILLING THAT CAN BE PUT IN A MORTISE WHEEL



WE MAKE ANY STYLE OR SIZE WANTED

WRITE FOR INSTRUCTION SHEET "O" WHICH IS FREE

QUICK SERVICE ON ALL SIZES

THE N. P. BOWSHER CO., South Bend, Ind.

ADVANCE BAG & PAPER COMPANY

HOWLAND, MAINE

Plant and Equipment for Sale

75 ton Sulphate Mill with wood room equipment, Digesters, Scott Evaporators, Rotary Incinerators, Screens and Wet Machine.

Complete Bag Plant with Machines.

For Particulars Write

FRANK H. DAVIS COMPANY

175 Richdale Ave. CAMBRIDGE, MASSACHUSETTS

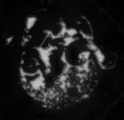
P. A. PAULSON, Consulting Engineer

Sulphite Mills a Specialty

Acid Absorption Apparatus . . . Simplified Cooking Method . . . Tubular Barking Drum . . . Thawing Conveyor . . . Bark Pressing Machine . . . Method for Saving B.T.U.

APPLETON, WISCONSIN

THE TRADE-MARK OF GOOD FELTS



The Waterbury Felt Co.

SKANEATELES FALLS N. Y.

THE PURE OIL CO.

PURE THREE POINT LUBRICATION

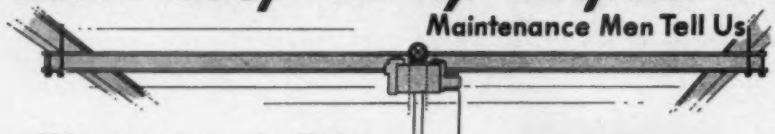
A Complete Line of Industrial Petroleum Products

A Pure Oil engineer will help solve your lubrication problems. Write today.

CHICAGO U.S.A.

"Northern Hi-Lift Hoists *don't keep us up nights"...*

Maintenance Men Tell Us



● Maintenance men say that Northern Hoists stand all the shop can give them. They rarely have to work on them, and when they do, accessibility makes it easy.

Northern Hi-Lift Hoists are built to forestall maintenance. Liberal design—robust construction—welded rolled steel frame—machine cut, heat treated alloy steel gears—Hyatt Roller bearings. But when maintenance *is* needed, all parts are quickly accessible. Mechanical brake parts, for example, can be removed without removing the gear case. Electrical parts are all standard—easy to obtain.

Write for new Bulletin

NORTHERN ENGINEERING WORKS
2601 ATWATER ST. DETROIT, MICH.

CRANES *Northern* HOISTS

Company had been 72 years at the Philadelphia address.

The new site gives 2,000 feet water frontage and will provide increased production facilities for present products and adequate facilities for new products. Research laboratory and pilot plant operations will be moved to the new site. Executive, accounting, and sales offices will remain as at present in the Widener Building. The new property is located in an outlaying Philadelphia district just outside the city proper.

◆

FOREIGN TRADE HOLDS STEADY WITH TRIMBEY

With all shipping schedules disrupted on account of the war and exports slowed up or deferred, many companies are viewing their foreign business with anxiety. However, the Trimbey Machine Works, Glens Falls, New York, advises that the only foreign order being held up is one for two Trimbey Pulp Screens which had been ordered before the war broke out.

In this connection, the Trimbey organization has made a number of recent foreign shipments. During January, three Trimbey Pulp Screens were shipped abroad; one to Johannesburg, So. Africa, and two to Tasmania. Five Trimbey Consistency Regulators were shipped to Tasmania with the pulp screens.

◆

RYERSON ADDS TO CHICAGO PLANT

Already the largest steel service plant in the world, the Chicago plant of Joseph T. Ryerson & Son, Inc., has increased its total area with the erection of another all-steel, modern structure.

The new building, which is 75 feet by 555 feet, increases the total floor space to well over 650,000,000 square feet. It will be used for storing hot rolled steel bars, shapes, and plates, and will be served by two new 15-ton cranes and direct railroad sidings. In addition to the new unit, an extension has been erected on a 100-foot span in the concrete reinforcing steel section which will increase facilities for handling and racking extra long length stock.

Ryerson's Chicago plant has eight protected railroad sidings which permit as many as forty-seven freight cars to be loaded or unloaded under roof at one time without subjecting stock to the weather. Big steel buildings, similar to the new structure, provide warehousing facilities for all products. This care in warehousing is part of the Ryerson Certified Steel Plan inaugurated by the company several years ago. The first Ryerson plant was established in 1842 and consisted of a two-story structure erected by Joseph T. Ryerson. At present the steel firm operates steel-service plants in ten principal industrial centers throughout the United States.

◆

10-MILE CONVEYOR SYSTEM IN CALIF.

Reputedly the longest belt conveyor system ever installed will be in use in the Central Valley of California to furnish the aggregate for the construction of Shasta Dam now being built by the U. S. Department of Reclamation.

Idlers for this huge system will be furnished by the Chain Belt Company of Milwaukee, Wisconsin. Over 16,000 Rex troughing and return belt idlers will be used.

◆

G. P. I. CORP. ESTABLISHES SPECIAL CLINIC

Special clinics on matters of interest to the advertising and graphic arts profession will be provided shortly by a project sponsored by the General Printing Ink Corporation known as P. A. C.

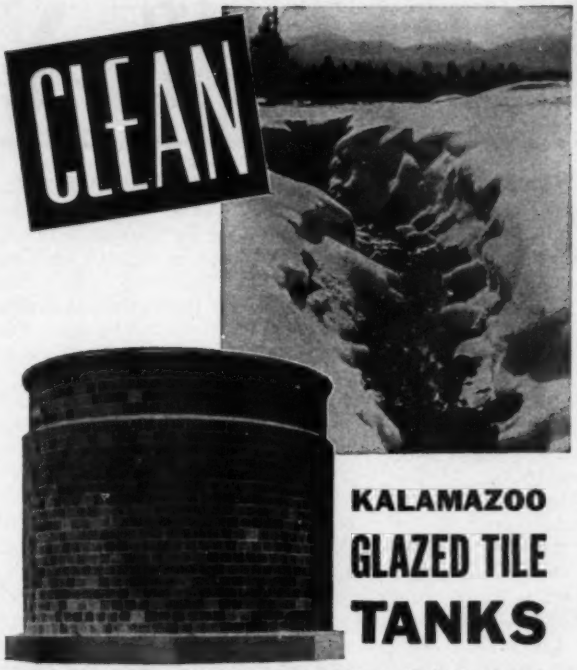
The purpose of the P. A. C. (Printing and Advertising Clinics) is to bring together leaders in the fields of advertising and printing to study new developments and trends, to exchange ideas and discuss common problems and to encourage higher standards in the graphic arts. A board of directors, to guide and advise on the program, is being drafted from all walks of industry.

◆

NEW YORK FAIR ANNOUNCES NEW EXHIBIT PLAN

The New York World's Fair of 1940 is presenting a new exhibit plan to advertisers providing for product display space through its specially created Displamor Division. The plan is being offered at a moderate cost to both the small exhibitor and to national advertisers.

Displamor exhibits will be installed in the major buildings and consist of three dimensional displays, many of them animated. This medium was soundly tested at the Century of Progress in Chicago and is, in fact, the result of a demand for similar display advertising space at the 1940 Fair.



KALAMAZOO
GLAZED TILE
TANKS

Their bright glistening surface can be kept absolutely clean by a few minutes wash down with a hose—no slime, no concrete chips. Impervious to the action of ordinary stock fluids.

Manufacturers of wood tanks for 60 years.

KALAMAZOO TANK & SILO CO.
KALAMAZOO MICHIGAN

RYERSON CERTIFIED STEELS

IN STOCK . . . IMMEDIATE SHIPMENT

When you need steel of any kind, a single bar or a carload, order from the nearest Ryerson plant. Write for Stock List.

Bars, Shapes	Shafting	Rivets, Bolts	Alloy Steel
Structurals	Tubing	Welding Rods	Tool Steel
Rails, Plates	Boiler Fittings	Stainless Steel	Floor Plates
Sheets—Strip	Reinforcing	Babbit, Solder	Safety Tread

Ryertex water-lubricated Bearings give cleaner, more uniform products . . . reduced power consumption . . . longer bearing life . . . and eliminate lubrication. These are some advantages of Ryertex installations on Jordans, Beaters, Press and Couch Rolls, grinders, Calendars, etc. Write for complete information.

Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Detroit, Cincinnati, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

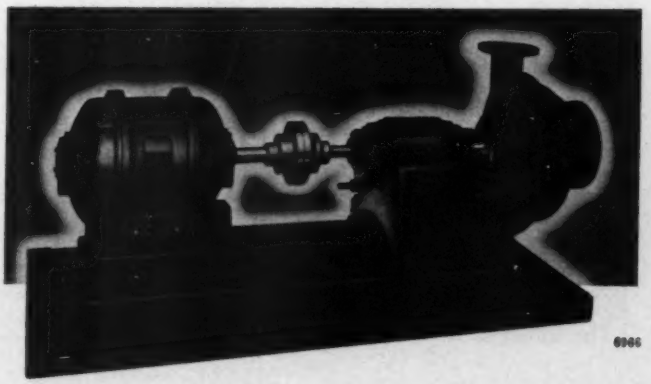
HOW MUCH DO YOU PAY ?

for Power Your Pumps throw away

Figure it out. A pump driven by a 40 H.P. motor can cost as much as $432.00 per month for power alone.* If the pump efficiency is only 10% less than that obtainable with a modern efficient pump, the loss amounts to $518.00 per year.

Check into your pumping costs. You may discover power losses that run into real money. Replace the power wasters with Warren pumps. Replacement costs are quickly paid off in savings. High operating efficiencies are maintained for long periods—your assurance of lower pumping costs per year—year after year.

**Figured at $.02 per kwh.*



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WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC. • WARREN, MASSACHUSETTS

WHEN SILENCE HURTS!

There's no "gold" in the silence that follows a machine shutdown due to foaming. It costs money—every minute!

A full line of foam killers designed to cope with almost any foam trouble is now offered by Nopco, specialists in solving foam problems.

NOPCO
EVOLVED THRU RESEARCH

National Oil Products Co.
Harrison, New Jersey
Boston - Chicago
Cedartown, Ga. - Los Angeles

GURLEY PAPER TESTING INSTRUMENTS

For Testing Porosity—Stiffness—Smoothness — Softness — Sizing

The Gurley R. D. Stiffness Tester

tests any paper from tissue to bottle cap. Simple, sensitive and accurate. Described in Bulletin No. 1420.

W. & L. E. GURLEY
America's Oldest Instrument Makers
TROY, N. Y., U. S. A.

SAFETY

RELIANCE ELEC. ISSUES ITS OWN SAFETY BOOKLET

To further promote the cause of safety at the Reliance Electric and Engineering Company, that company's management has recently caused to be printed and distributed a new eight-page pocket-size booklet of Safety Rules. A single sheet, 8½ by 11 inches, printed on both sides, comprises the entire booklet.

Incorporated in the booklet are illustrations and reading material instructing employees when to use goggles, gloves, etc., and stressing the importance of machine guards and the use of tools. Distribution of these booklets, each bearing the individual employee's name, was handled at Reliance through plant foremen.

◆

▶▶▶ WORKMEN'S COMPENSATION RATES in the State of Massachusetts have been reduced on the initiative of the Massachusetts Rating Bureau by an average of 7.2 per cent. The approved 1940 rates brings down the average cost for manufacturers in the Bay State by 25 per cent since rates in effect prior to May, 1936.

▶▶▶ THE ACTION OF LIGHT on foodstuffs led to some interesting information from the General Printing Ink Corporation of New York City. It was found that two colors, yellow and green, are particularly favorable. In transparent containers these two colors reduce the harmful action of ultra-violet and infrared radiation. In opaque containers yellows, white and pale green, because of high light and heat reflection, tend to keep the contents of the package cooler.

◆

▶▶▶ NEW INKS FOR STEEL DIE ENGRAVING WORK have been announced by the International Printing Ink Division of the Interchemical Corporation. The new inks are reported to dry to tack-freeness in thick films without increasing the rapidity of drying in the fine engraved lines of the die. The adhesive qualities of the inks are such that they can be printed on difficult papers.

◆

▶▶▶ ONE MINOR ACCIDENT in forty-five years is the proud record of Albert W. Gosha of the Kimberly-Clark Corporation. Mr. Gosha, who began his career in the paper industry in 1894 (See Personals), recently retired from the K-C organization.

The Paper Industry Safety Contest

July 1, 1939 to June 30, 1940

Out of 181 mills reporting for December, 18 have perfect record

PERFECT SCORES
Division I—Pulp and Paper Mills

PARTICIPANT	MILL	LOCATION
GROUP A		
Price Brothers & Co., Ltd.	Kenogami, P. Q.	Canada
GROUP B		
GROUP C		
Southern Kraft Corporation	Continental Div.	York Haven, Pa.
Escanaba Paper Company	Escanaba	Michigan
Strathmore Paper Co.	Woronoco	Massachusetts
American Writing Paper Corp.	Linden Div.	Holyoke, Mass.
The Mead Corporation	Sylva Paperboard Co.	Sylva, N. C.
GROUP D		
Bird & Son, Inc.	Phillipsdale	Rhode Island
Crown Zellerbach Corporation	Crown Willamette Paper Co. Div.	Lebanon, Ore.
American Writing Paper Corp.	Nonotuck Div.	Holyoke, Mass.
United States Gypsum Company	North Kansas City	Missouri
The Mead Corporation	Nashville	Tennessee
International Paper Co.	Livermore No. 11	Livermore Falls, Me.
*Spaulding Fibre Co., Inc.	Milton	New Hampshire
Hollingsworth & Whitney Co.	Arcostook & Cobbossee Mills	Gardiner, Me.
Hollingsworth & Whitney Co.	Abenaquis Mill	Madison, Me.
International Paper Co.	Riley No. 23	Riley, Me.
*Spaulding Fibre Co., Inc.	Hayes	New Hampshire
Division II—Paper and Board Re-Manufacturing		
Bay West Paper Co.	Green Bay	Wisconsin

*December report missing—covers five months only.

"NON-USERS ARE THE LOSERS"

TENAX FELTS

FINISH AND TRIM

Greetings to Fernandina

As makers of *TENAX FELTS* we extend Congratulations to Rayonier as its new mill at Fernandina, Florida, goes into operation.

TENAX FELTS have made good and technical men and mill superintendents join in specifying them more and more, year after year.

"Non-Users Are The Losers"

LOCKPORT FELT COMPANY

Newfane, N. Y.—U.S.A.

Just Released

INDUSTRIAL SAFETY SERIES PAMPHLET-PPI

"PAPER AND PULP MILL SAFETY"

The purpose of this NEW pamphlet is to discuss safe methods, equipment and operations of paper and pulp manufacturing mills. It follows the Safety Code for Paper and Pulp Mills (PI-1936) approved by the American Standards Association, and includes these subjects.

- The Yard
- Preparing Pulp Wood
- Rag and Old Paper Preparation
- Chemical Processes of Making Pulp Bleaching
- Mechanical Pulp Process
- Stock Preparation
- Machine Room
- Finishing Room

A copy of this pamphlet will be sent FREE to any plant safety director or executive on request. Just drop a line on company letterhead, to the Paper and Pulp Section

NATIONAL SAFETY COUNCIL

20 North Wacker Drive Chicago, Illinois

OTHER COUNTRIES

ENGLISH NEWS

The paper trade in England is now passing through an extremely interesting phase. Notes received from THE PAPER INDUSTRY AND PAPER WORLD'S British correspondent indicate that contrary to all expectations, the first four-month period of the present war has produced a sense of stability which never had existed in the industry on any previous occasion. It is just possible, says the report, that this may have a beneficial effect when peace is restored.

In the early years of the last war, the British paper industry was left to its own resources, and, as a result, prices soared to heights undreamed of. When the war was over, the paper trade paid for this artificial prosperity with a sudden slump in prices which proved disastrous to both manufacturers and merchants.

At present, the British trade has a paper controller who is supported by a small band of paper trade men who have devoted their lives to the industry. Prior to last September, a number of conventions covering several sections of the trade were in being, which held prices to a certain extent. On September 3, the controller issued his first schedule of prices to which all had to conform. This put a stop to any rise in price but, obviously, such prices could not be maintained for long in the face of increasing prices of materials such as coal, etc. Eight weeks later, a revised schedule appeared which disclosed an appreciable increase.

Concurrently with this new schedule the controller took over stocks of pulp in England. This regulated, prices and costs operated with the mills while regulated prices between mills and merchants and between merchants and printers were in operation.

Naturally with a vast undertaking of this description isolated cases of difficulties arose but in the main it has worked smoothly and has created a sense of stability. The outcome of this sense of stability has created a desire that it should not be lost when the war is over and at present a strong movement is afoot that this solid co-operation among mills, merchants, and printers should be continued.

During the first few days of the war there was, of course, quite a little confusion. General printing and advertising ceased automatically, but their place was taken for the moment by government orders. After a few weeks a little advertising began to return and a few printing orders were to be found. Meanwhile, it is stated, the general public were buying as usual especially as they discovered that prices were not advancing rapidly.

Speaking for the future outlook there will undoubtedly be a tendency for a more normal flow of trade to establish itself again. This will be aided to a certain extent by the extra stationery demands consequent upon so many men being away from their homes. Also as so many staffs have been slightly depleted a lighter business turnover will not be so noticeable.

SUCTION ROLL CLEANING MADE *Easy and Sure!*

How do you keep suction rolls clean? By manual operations involving the use of punches and drills? By other methods involving long shut-down periods? Do you waste much dryer steam by postponing necessary cleaning because of its interference with production schedules?

MAGNUS SUCTION ROLL CLEANER

makes it easy to keep your rolls clean—in quick time and at minimum cost. It penetrates deep into the accumulations that clog the holes in the bronze inner portion of the rolls, dispersing the particles of slime, size, etc., without harming either rubber or metal. It rinses off easily, quickly and thoroughly.

Set up a routine cleaning schedule with Magnus Suction Roll Cleaner. Your rolls will always function at top efficiency.

ASK FOR THE MAGNUS PAPER MILL CLEANING HANDBOOK

A mighty useful data book designed to help you on your cleaning problems.

MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants.

192 South Avenue Garwood, N. J.

Magnus CLEANERS

ITALIAN NEWS

New Laboratory

In order to further the study of cellulose production through the use of national raw materials, a new laboratory was established by the National Committee for Research at one of the Burgo mills. Numerous scientists and technicians attended the dedicatory ceremonies on December 14. The 70-room laboratory will be used for cellulose experimentation entirely and will work in close collaboration with the Italian paper industry. Results of the experimental work will be published in the future.

Funds have also been set aside for experimentation in the growing of poplar trees. In Italy's Piedmont area considerable acreage has been taken over for this purpose.

New Mill

The Societa Cellulosa Lucana of Venosa (Potenza) has been authorized to install equipment for the production of semi-chemical pulp. A mill for the production of packing paper is also to be established.

The new paper mill will be located adjacent to the semi-chemical pulp

mill around which there is an abundant supply of corn straw. It is expected that the mill will produce about 2,000 tons of packing paper a year.

Pulpwood Importation

A recent law, which took effect last December, permits the importation of wood for the production of paper and pulp duty free up to a 180,000 tons limit. This is subject to the formalities and restrictions established by Italy's Ministry of Finance.

◆

▶▶▶ ALL NEWSPAPERS in Barcelona, Spain, have curtailed the number of pages as a result of a recent decree. This measure is alleged to have been taken because of a shortage in paper and the difficulty of obtaining raw materials from abroad, according to the American Consulate General in Barcelona.

◆

▶▶▶ THE DEMAND FOR KRAFT LINER BOARD in the United Kingdom has grown to such an extent since the outbreak of war that it has now reached a level exceeding the capacity of the mills of Edward Lloyd, a subsidiary of Bowater's Paper Mills, Ltd., and one of the largest manufacturers in England. Additional productive capacity is being arranged for at Bowater's Mersey mills where one of the newsprint machines is being converted.

◆

CELLULOSE EXPERIMENTS IN GERMANY

Germany is now carrying on preliminary work towards the utilization of hemp and flax scourings for the production of cellulose. The main use of this waste material hitherto has been as fuel for heating the kettles of the hemp and flax retters.

It has been estimated that at least 100,000 tons of flax and 30,000 tons of hemp scourings can be collected annually in greater Germany. Allowing for a cellulose content of about 27 per cent, an annual production of 30,000 tons of cellulose could be obtained from this source, it is said. The cellulose produced from these scourings is rather short in fiber and therefore would probably be used for staple fiber rather than paper-making material.

◆

▶▶▶ FRENCH CITIZENS have been requested to save all paper wrappings, newspapers, sacks and cartons for government collection. This suggestion was aimed at preventing the waste of these materials.

ELEVATED STORAGE *provides* FIRE PROTECTION *for the* PAPER INDUSTRY

CHESAPEAKE-CAMP CORP.

Illustrated above is the 100,000-gal. Horton ellipsoidal-bottom elevated tank used for sprinkler service at the Franklin, Va. mill of the Chesapeake - Camp Corporation.

SCOTT PAPER CO.

The 100,000-gal. tank at the left supplies water for hose and hydrant outlets and for sprinkler service. It is a standard structure enclosed in steel sheeting to resemble a roll of ScotTissue.

BRUNSWICK PULP & PAPER CO.

At the left is a view of the 150,000-gal. elevated tank used for general water supply and sprinkler service at Brunswick, Georgia.

KRAFT CORP.

Shown at the right is the 100,000-gal. elevated water tank installed for sprinkler service at the Kraft mill, Fernandina, Florida.

HERE are four typical examples of the way in which elevated water tanks are employed to provide gravity water pressure for automatic sprinkler systems used to protect paper mills from the danger of destruction by fire. With a gravity supply in an elevated tank, an adequate water reserve is held above the property, ready to flow the instant any blaze opens a sprinkler head. A few gallons of water sprinkled directly on the flames will quench the fire before it has a chance to spread and cause extensive damage. Write for information.

CHICAGO BRIDGE & IRON COMPANY

Cleveland.....2267 Rockefeller Bldg.
Birmingham.....1511 North Fiftieth Street
Tulsa.....1651 Hunt Bldg.
Houston.....2919 Main Street
Detroit.....1566 Lafayette Bldg.
Philadelphia.....1653-1700 Walnut Street Bldg.
Boston.....1562 Consolidated Gas Bldg.
Los Angeles.....1459 Wm. Fox Bldg.
Chicago.....2445 Old Colony Bldg.
New York.....3350-165 Broadway Bldg.
Dallas.....1446 Liberty Bank Bldg.
San Francisco.....1017 Rialto Bldg.

Plants at Birmingham, Chicago and Greenville, Pa.
In Canada: Horton Steel Works Limited, Fort Erie, Ontario

PERSONALS

SHATTUCK "BOYS" GATHER IN REUNION

S. F. Shattuck, vice president of the Kimberly Clark Corporation, was honored recently by 300 former members of his famous "Boys Brigade," an organization which was started forty years ago. The "boys" honoring Mr. Shattuck were, at one time or another, members of this organization.

The organization was begun with the purpose of promoting friendliness between men and boys of Neenah and to develop ideals and standards. It has been sponsored by the paper mill executive during the last thirty-nine years. Membership in this unique organization is highly cherished and it is considered a very valuable contribution to the city of Neenah. Former members came from all over the Midwest to honor Mr. Shattuck at the reunion.

◆

DAVIES HEADS NEW DEPT. AT PENN. SALT

Richard L. Davies, well known throughout the chemical and allied fields, is now manager of the newly-established market research department of the Pennsylvania Salt Manufacturing Company. Mr. Davies is known to many in the chemical and allied industries through his sales development work on various Penn. Salt chemicals, as well as through his chemical manufacturing and usage patents. He has also contributed to trade and technical publications.

The new department which Mr. Davies heads will make studies of the market for products now manufactured by the Pennsylvania Salt Manufacturing Company and will launch the sale of new products, in addition to suggesting to the management what should be considered for future production. Mr. Davies will be located at the executive offices of the company in Philadelphia.

◆

ARTHUR COSLER TO MANAGE EASTERN CORP.

Manager of the Eastern Corporation, Orono, Maine, is the new position just accepted by Arthur S. Cosler, formerly with Bauer Brothers, Springfield, Ohio. This plant which has been closed and only recently emerged from 77-B reorganization (cf. *P. I. and P. W.*, Nov., 1939) will be put into operation very soon.

Mr. Cosler was formerly sales manager with Bauer Brothers, which position he resigned last November. He has had wide experience in paper stock and pulp preparation and he will fit his new connection most admirably.

◆

MASON AND JEHL RECALL DAYS OF THOMAS EDISON

Two former associates of Thomas Alva Edison, William H. Mason and Francis Jehl, held a two-man reunion recently in Dearborn, Michigan, site of the Menlo Park laboratory of Greenfield Village. Mr. Mason, inventor of the Masonite process of fabricating wood fiber boards, was an associate of Edison for seventeen years. The meeting between Mr. Mason and Mr. Jehl occurred while the former was in Detroit to address a meeting of the Producers Council Club and Michigan architects.

William H. Mason (left) and Francis Jehl

Mr. Mason joined the Edison laboratory in 1899 as a laboratory assistant and rose to become general engineer of all Edison plants. After the World War, he experimented with hydraulic transmission for automobiles and then worked with the southern lumber industry, perfecting a process for extracting turpentine, resin and pine oil from sawed lumber while it was being kiln dried. Mr. Mason is also well known for his work on the "explosion process" for breaking down small, irregular pieces of lumber into cellulose fibers and lignin and compressing them into the present Masonite fiber board. Mr. Jehl is in charge of the Dearborn laboratory.

◆

DR. A. L. TAYLOR JOINS OAKITE'S TECHNICAL STAFF

A new member has been added to the technical staff of Oakite Products, Inc. This technician is Dr. A. Lloyd Taylor, formerly director of the department of chemistry at Pease Laboratories, New York City, with which firm he was associated for the past six years.

Dr. A. L. Taylor

Because of his extensive activities in the field of industrial chemistry where he has directed numerous projects covering a range of industries, Dr. Taylor brings to his new position a wealth of experience. The doctor will devote most of his time to chemical research and development of cleaning materials for production and related cleaning operations of major industries, although he will also concentrate his attention in technical field service.

Dr. Taylor will be located at the company's general offices in New York City where the research and service laboratories of the Oakite chemical and mechanical divisions are maintained.

◆

FORMER STENO WILL SPEND $45,000,000

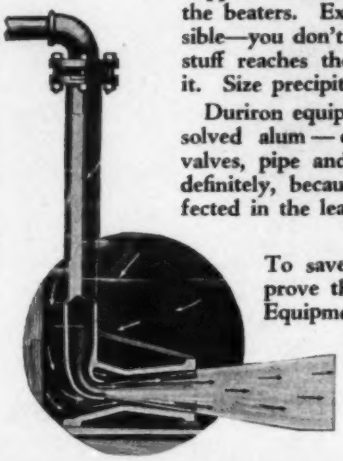
One day in the year 1900, a genial lad of eighteen applied for a stenographic position with the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin. He was hired,

DURIRON for Alum

DISSOLVED alum is economical to use.

There is no excess used as so often happens when dry alum is thrown into the beaters. Exact pH control is possible—you don't have to wait until the stuff reaches the header-box to check it. Size precipitation is better, too.

Duriron equipment for handling dissolved alum — dissolving jets, pumps, valves, pipe and fittings—will last indefinitely, because Duriron is not affected in the least by alum.



To save money — and to improve the paper—use Duriron Equipment for alum.

Bulletins on Duriron Epuipment will be sent you free on request.

The DURIRON COMPANY, Inc.
General Offices and Plant: DAYTON, OHIO
Branch Offices and Sales Representatives in Principal Cities

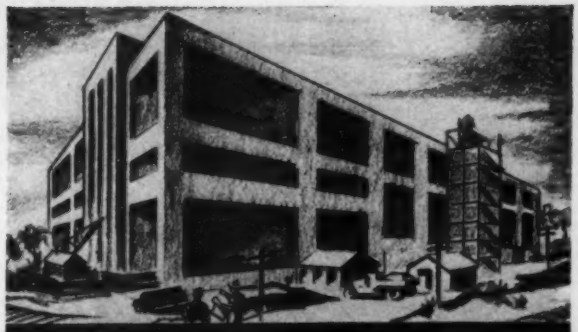
...of ordering your alkalies often kick back!

• • • but when you use Solvay Alkalies in the manufacture of your paper products you can depend on their high quality . . . depend on their constant uniformity *at all times.*

SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 RECTOR STREET NEW YORK, N. Y.

BRANCH SALES OFFICES:
Boston Charlotte Chicago Cincinnati Cleveland Detroit New Orleans
New York Philadelphia Pittsburgh St. Louis Syracuse

SOLVAY ALKALIES



They Ask Layne BEFORE THEY BUILD

Large and small industries, as well as municipalities, consult with Layne about Well Water Supplies before designing and constructing new buildings, additions or extensions to existing facilities. The reason is obvious. Like gold, water is where you find it. Layne engineers score amazingly high records in selecting sites where ground water may be produced. Furthermore, many decades of world wide experience in developing well water supplies enables them to prove the adequacy and permanence of the supply before the wells are constructed.

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LAYNE-ARKANSAS CO., STUTTGART, ARK.
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LAYNE-LOUISIANA CO. LAKE CHARLES, LA.
LAYNE-NEW YORK CO. . NEW YORK CITY, AND PITTSBURGH . . . . . PA.
LAYNE-NORTHWEST CO. MILWAUKEE, WIS.
LAYNE-OHIO CO. . . . COLUMBUS, OHIO
LAYNE-TEXAS CO. . . . HOUSTON AND DALLAS . . . . . TEXAS.
LAYNE-WESTERN CO., KANSAS CITY, MO. CHICAGO, ILL. . . . OMAHA, NEBRASKA
LAYNE-WESTERN CO. OF MINNESOTA MINNEAPOLIS . . . . . MINN.
LAYNE-BOWLER NEW ENGLAND COMPANY, BOSTON . . . . . MASSACHUSETTS.
INTERNATIONAL WATER SUPPLY, LTD., LONDON . . . . . ONTARIO, CANADA

From the selection of the site, through the drilling of the wells, supplying and installing proper pumps, to the test and completion of the system, Layne handles the entire job. This plan eliminates the problem of divided responsibility. It insures complete satisfaction.

For free bulletins, address
LAYNE & BOWLER, INC.
Dept. P, Memphis, Tennessee

LAYNE

PUMPS & WELL WATER SYSTEMS
For Municipalities, Industries, Railroads, Mines and Irrigation

and today, forty years later, that same lad—now white-haired and still genial—is general manager of purchases for the company. He will spend about $45,000,000 this year.

Such is the story of Allis-Chalmers' Fred E. Haker, who recently was appointed to the executive position.

Fred E. Haker

When Mr. Haker came to the company forty years ago he and two other men composed the purchasing department. Today that department employs more than 100 people and in the coming year, under Mr. Haker's direction, an average of 600 purchases a day will be considered, analyzed and placed with something in the neighborhood of 7,000 different firms in this country and abroad.

From his original position Mr. Haker worked into other jobs in the department, becoming assistant manager of purchases in 1916. As a result of making purchases for all departments of the company he has, over the years, become familiar with their complete personnel and as a member of the shop executive committee has been close to the shop personnel of the big organization.

Mr. Haker is active in many civic organizations. He has headed the Community Fund drive for many years and has always headed the Red Cross drive within the Allis-Chalmers organization. He belong to both the national and local associations of purchasing agents.

◆

▶▶▶ Associated with the Babcock & Wilcox Tube Company since 1929, *W. W. Williams* is relinquishing his position as general manager to go into business for himself. Details of his new business venture will be announced at a later date.

BARTON LEAVES PRESIDENCY OF NATIONAL OIL

John H. Barton, president of the National Oil Products Company, Harrison, New Jersey, has resigned from the company effective March 1. His resignation was announced at the regular monthly directors' meeting.

Mr. Barton was first associated with Nopco as a salesman twenty years ago. Before his election to the presidency in 1938 he held numerous other executive posts including sales manager of the company's farm seed division and vice president in charge of the plant construction and maintenance. Mr. Barton lives in South Orange, New Jersey, and manages a large farm in Flemington, N. J. He has made no announcement as to his future plans.

◆

STEVE HOCKER RESIGNS FROM S. D. WARREN CO.

Associated with the S. D. Warren Company at Cumberland Mills, Maine, for more than twenty years, Steve Hocker has resigned his position as assistant superintendent of paper machines at that company to accept a position with Clays and Paper Research, Inc., New York City.

Steve Hocker

Mr. Hocker, during his association with the Warren organization, had held many positions including that of purchasing agent, special research worker, and his last position. In his new connection, Mr. Hocker will represent the New York company throughout the United States. Clays and Paper Research, Inc., controls the Kamig process for making alum from clay.

E. W. G. ("Ted") Cooper

E. W. G. COOPER HAS NEW POST IN TASMANIA

After a splendid record of nine years as assistant paper mill superintendent of the Crown Willamette Paper Company Division of Crown Zellerbach Corporation, Camas, Washington, E. W. G. ("Ted") Cooper has resigned, and in April Mr. Cooper will leave the States to take up his new connection with the Australian Newsprint Mills, Ltd., as superintendent of its new mill in Tasmania.

Before going with the Crown Zellerbach Company, Mr. Cooper was with the Racquette River Paper Company, Potsdam, New York, but leading up to that connection he had a long and interesting record in the industry both in this county and abroad. He began his career with Green & Sons, Tovil, Maidstone, England. His international experience gives him special fitness for his new work.

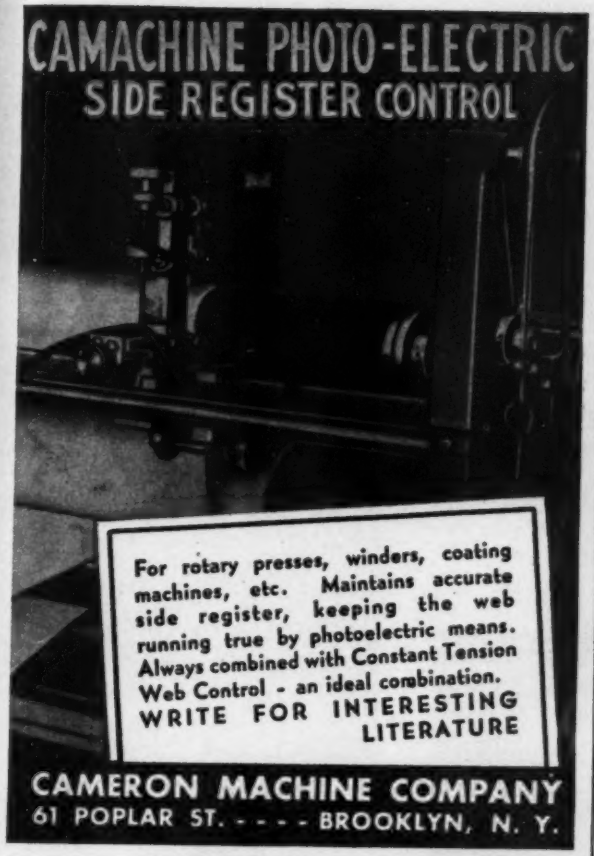
◆

HOLMES SUCCEEDS CLIFTON CROCKER

Joseph E. Holmes, who has been vice president and treasurer of the Crocker-McElwain Company and the Chemical Paper Manufacturing Company, both of Holyoke, Massachusetts, was elected president at a meeting of the board of directors on January 19. Mr. Holmes succeeds the late Clifton A. Crocker who had been head of both companies for many years and who passed away suddenly last December.

Wallace B. Camp of Springfield, Massachusetts, was elected to the vacancy on the board of directors. Mr. Camp is chairman of the board of the Springfield National Bank.

CAMACHINE PHOTO-ELECTRIC SIDE REGISTER CONTROL



For rotary presses, winders, coating machines, etc. Maintains accurate side register, keeping the web running true by photoelectric means. Always combined with Constant Tension Web Control - an ideal combination. WRITE FOR INTERESTING LITERATURE

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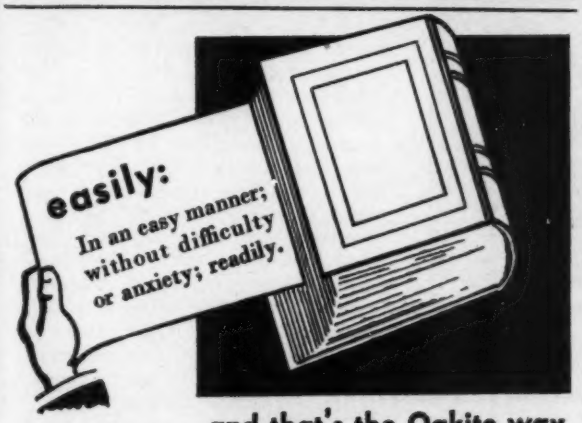

. . . and that's the Oakite way to cure slime troubles

Is slime removal a problem in your plant? It need not be because it can EASILY be solved the safe, sure Oakite way. Successful experience shows that all slime in the average system yields readily and EASILY to the vigorous, fast-working cleaning action of Oakite Slime Remover.

Write today for further data on this and other paper mill cleaning jobs concisely described in FREE booklet for mill executives. No obligation, of course.

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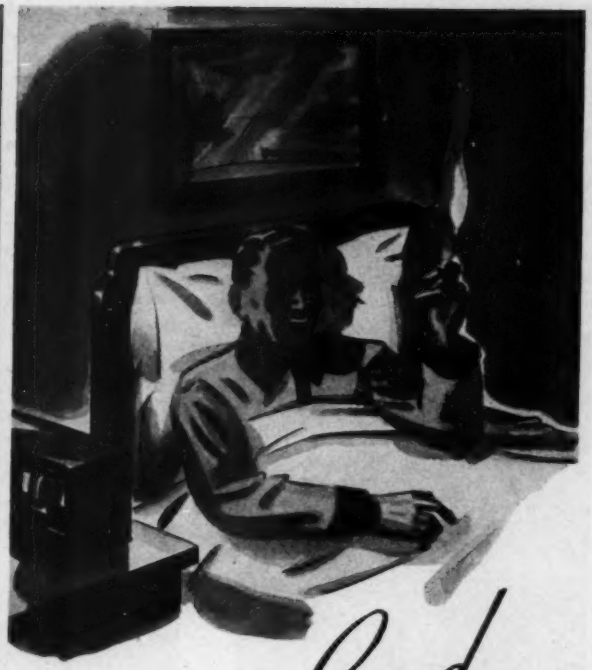
OAKITE *Certified* **CLEANING**



IT'S A *Good Comfortable Bed!*

We made our bed some 36 years ago; we have been lying in it, so to speak, ever since; nor have we the slightest intention of occupying any other. However, we get precious little time for rest, for it's a big job we have on hand. Lindsay manufactures one line only—wire cloth. Lindsay serves only one field—the paper field—*your field.* Research goes on untiringly. Our objective is the same as yours: to develop better materials, better methods, better equipment (in particular, better Fourdrinier and cylinder wires), and *better paper.* To this end Lindsay pledges all its time and facilities and resources.

THE LINDSAY WIRE WEAVING COMPANY
Serving the Paper Industry Since 1903
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Lindsay **WIRES**

BAUER BROS. CO. ADVANCES GALLOWAY

W. W. Galloway, who has been connected with Bauer Brothers Company, Springfield, Ohio, since last July, has just been made sales manager of the Pulp and Paper Division.

The company announces that sales in its Pulp and Paper Division showed an increase of 40.1 per cent last year over 1938. This division is developing

W. W. Galloway

new methods in manufacture and service. Mr. Galloway was treasurer and general manager of The Hagar Straw Board and Paper Company, Cedarville, Ohio, prior to his connection with Bauer Brothers. He is a member of the Technical Association and has had wide experience.

◆

"TIME TO RETIRE" AFTER 45 YEARS A PAPERMAKER

After forty-five years of service with the Kimberly-Clark Corporation, Albert W. Gosha retired from the company at the start of the new year. Twenty-nine years of his career in the paper industry were spent in the Kimberly mill where he was boss machine tender for the major portion of the time and paper machine sparehand during the more recent years. Mr. Gosha also worked in the Neenah, Appleton, and Niagara mills. He began his career in the paper industry in 1894.

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▶▶▶ *Roy A. Carlin,* formerly a member of the Carlin Chemical Company, is now associated with the American Industrial Company of Buffalo, New York. Mr. Carlin has done considerable research work in connection with de-inking and is now devoting his time to research in the field of waste paper reclamation and other similar work.

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▶▶▶ *Harold Swanton,* sales manager of Precision Bearings, Inc., Los Angeles, was recently elected vice president of the company, succeeding *Normal Bell,* who has resigned. Mr. Swanton will continue in the capacity of sales manager in addition to his new duties.

◆

SCOTT COMPANY ELECTS TREASURER

An announcement has just been made by Scott Paper Company, Chester, Pennsylvinia, that G. Willing Pepper, formerly a partner of Smith, Barney and Company, investment bankers, was elected on January 8 to

G. Willing Pepper

the office of treasurer and to membership on the board of directors.

Mr. Pepper fills the vacancy caused by the passing of the late E. S. Wagner, in August of last year.

◆

AUSTIN COMPANY PROMOTES TWO

Widely known in industrial circles on the Pacific coast, George W. Plaisted, vice president of the Austin Company in charge of West coast operations, is now vice president and general sales manager of the company with headquarters in Cleveland.

The Austin Company also announces the appointment of A. E. Phelps as general purchasing agent with headquarters in Cleveland.

D. G. MOON NOW ON STAFF OF SIRRINE CO.

D. G. Moon, widely-known pulp and paper mill engineer, is now a member of the engineering staff at J. E. Sirrine and Company, Greenville, South Carolina.

Mr. Moon has had many years' experience in the paper industry beginning some time prior to the World War when he was connected with the

D. G. Moon

design and construction of a number of important pulp and paper and hydroelectric plants in the Middle West. Following his service with the 122nd Engineers during the war, Mr. Moon was associated with the Continental Paper and Bag Corporation as chief engineer in charge of the mill expansion work in Wisconsin, New England, and Canada. Later, Mr. Moon joined the staff of the International Paper Company's manufacturing department. In 1935, he was chief engineer for the Union Bag and Paper Corporation, after which he entered private practice in Savannah.

Mr. Moon was first chairman of the Southern States Pulp and Paper Club and has been active in furthering industrial relationship in the South. He directed the first Southern Paper Festival held in Savannah last year.

J. E. Sirrine and Company maintains a permanent staff of 75 engineers and specialists and in the past 38 years have served in practically every phase of industrial development.

◆

▶▶▶ The appointment of *E. L. McIlhenny* as manager of the Detroit Rex Products Company's alkali division was announced recently. Mr. McIlhenny, a graduate in chemical engi-

price or quality knife grinder

The Favorite of Them All

Sometimes when it is a question of price or quality, there may be some doubt as to which is the more economical investment. Though for any extended service the element of quality (on a machine which will last for many years) has it so far over the question of initial cost that there is not much room for question.

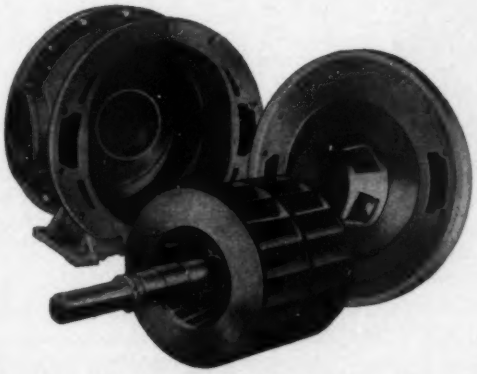
And with the latest Covel-Hanchett grinder (the machine which established the traveling wheel grinder market,—the product of many years development of this one special service) where both low price and high quality prevail—that is what makes the Covel-Hanchett Traveling Wheel Grinder the machine employed in more paper mills than all other models combined.

For catalogue description write to the pioneers in the industry. No obligation.

Latest Covel-Hanchett Traveling Wheel Grinder

COVEL-HANCHETT CO.—Big Rapids, Mich., U. S. A.

SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

TROUBLE SHOOTER for Pulp Mills

Connect your drying roll bearings to header lines with Rex-Bellows STAINLESS STEEL EQUALIZERS. Due to bellows construction, these units take axial as well as radial motion; require much shorter lengths to compensate for offset in piping; do away with necessity of looped connections and consequent frequent failures. These Equalizer units have all the qualities of 18-8 stainless steel—corrosion resistance; durability; higher resistance to fatigue, vibration and continued bending movement. Available as straight bellows or in divided bellows form, with circular resistant welded fitting attached as illustrated. Write for information on these time-and-money-saving units.

CHICAGO METAL HOSE CORP.
Maywood, Illinois (Chicago Suburb)

neering, has spent the past thirteen years in the metal cleaning industry and will now have charge of all sales and service of the Detroit company's complete line of alkali cleaners.

◆

▶▶▶ *Floyd J. Borland,* formerly associated with the Taggart Paper Company, has accepted the position of superintendent of the Orange Paper Company, Orange, Texas.

▶▶▶ *Roy W. Emerson,* formerly of Westinghouse Electric and Manufacturing Company, is now associated with the Pittsburgh Piping and Equipment Company as metallurgist and special welding engineer. Mr. Emerson had been engaged in welding research at the Westinghouse company. Prior to his association with the electrical company, Mr. Emerson was a member of the Carnegie Illinois Steel Company's research staff.

▪ NECROLOGY ▪

A. F. TOWNSEND

Colonel Arthur F. Townsend, chairman of the board of Raybestos-Manhattan, Inc., and general manager of the Manhattan Rubber Manufacturing Division, passed away January 14 at his residence in Ridgewood, New Jersey, He was 74 years of age.

Colonel Townsend was one of the founders of the Manhattan Rubber Manufacturing Company in 1893, and was successively, secretary, vice president and president. He was president of the company from 1903 until 1929, when Raybestos-Manhattan, Inc., was organized. Since 1929 he had been chairman of the board of the latter firm and general manager of the Manhattan Rubber Division.

A leader in the rubber industry in which he spent fifty-five years of his life, Colonel Townsend was also very active in military work and was chief quartermaster in the New York National Guard with the rank of colonel. He was the godson of one of America's naval heroes, Admiral David Glasgow Farragut.

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▶▶▶ *Francis W. Arkoette,* beater engineer at the Stevens Paper Mill, Westfield, Massachusetts, passed away on January 20. Mr. Arkoette was fatally injured at work. He was 25 years old and is survived by a widow and two children.

◆

LEWIS J. BROWN

Lewis J. Brown, president of the International-Stacey Corporation, passed away January 11 in Columbus, Ohio, at the age of 49.

Mr. Brown was born in Bristol, England, and came to this country in 1907. His rise in business was rapid and he became president of the Nichols and Shepard Company, later becoming executive vice president of the Oliver Farm Equipment Company. In 1930 he became president of the Kellogg Company where he introduced the six-hour working day plan, an innovation which attracted international attention.

At the time of his passing, Mr. Brown was chairman of the board of directors of the International Derrick and Equipment Company of Texas and

Lewis J. Brown

California and was also chairman of the board of directors of the Roots-Connersville Blower Corporation and treasurer of the Stacey Brothers Gas Construction Company. He is survived by his widow and two children.

◆

C. A. BABCOCK

For many years associated with the paper industry in Wisconsin, C. A. Babcock, president and treasurer of the Wisconsin River Paper and Pulp Company, Stevens Point, Wisconsin, passed away on January 19 at the age of 72.

Mr. Babcock was born in Kaukauna, in 1868, and made his start in the paper industry with the Union Bag and Paper Company of that city. He moved to Neenah in 1889 and was associated with the Whiting-Plover Paper Company until 1911. A member of the board of directors of the First National Bank of Neenah since 1905, he was named vice president in 1920. He was also vice president of the Merchants and Manufacturing Hotel Association. Interment took place in Neenah on January 21.

◆

EDWIN W. ALLEN

Edwin W. Allen, vice president of the General Electric Company since 1926, passed away January 1 in Baltimore, Maryland, where he had been ill.

Mr. Allen graduated from the Virginia Polytechnic Institute in 1900 and entered the employ of the General Electric Company as a student engineer the following year. He was located in Schenectady until 1911 when he was appointed engineer of the central district with headquarters in Chicago. He remained in Chicago until 1924 when he was named manager of the engineering department. Two years later he was elected a vice president.

Mr. Allen was a fellow of the American Institute of Electrical Engineers and a member of the Western Society of Engineers. He is survived by one brother.

◆

▶▶▶ Friends and associates of C. K. Blandin, president of Blandin Paper Company, Grand Rapids, Minnesota, will regret to learn of the passing of *Mrs. Blandin,* at the home in Grand Rapids, January 29, following an extended illness.

◆

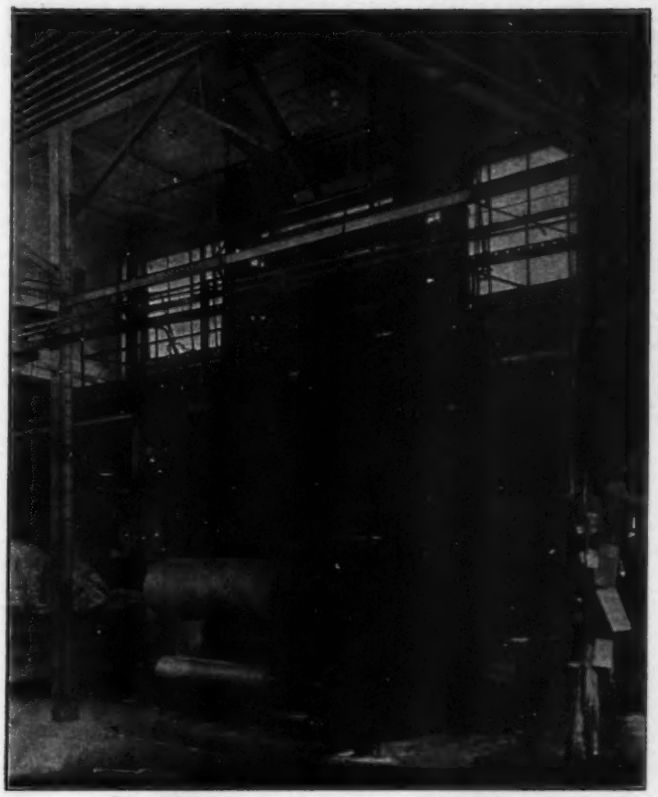
HUGH J. McKANE

While driving through a snowstorm near Camden, Arkansas, Hugh J. McKane, manager of the New Orleans office of Stein, Hall & Company, Inc., Chicago, met with a fatal automobile accident.

Mr. McKane had been with Stein Hall for twenty-eight years, during which time he had been associated with several of the company's large offices in the East, the Midwest and the South. He would have been 56 years of age February 21. A widow and three sons survive.

◆

▶▶▶ *George C. Andrew,* sales manager of the Monadnock Paper Mills, Bennington, New Hampshire, passed away January 24. Mr. Andrew had been associated with the Monadnock company for 33 years. Previous to his connection with the latter concern he was connected with the Tileston and Hollingsworth Company. He is survived by his widow and a son.



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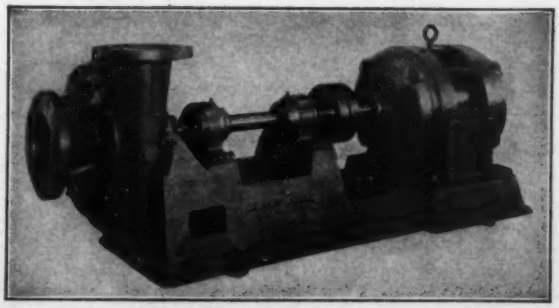
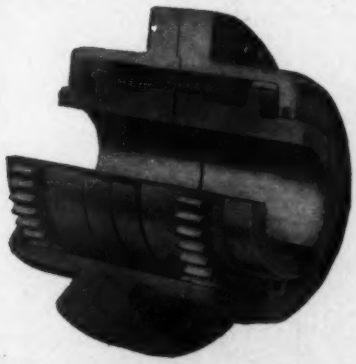


POOLE



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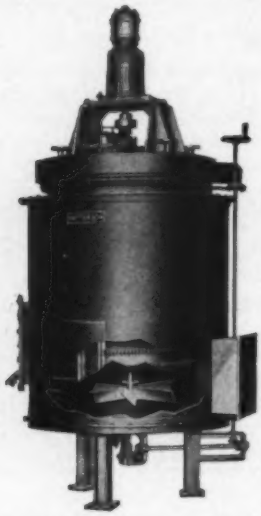
Baltimore, Maryland

NEW EQUIPMENT AND SUPPLIES

Electrically-Heated Process Kettles

The Patterson Foundry & Machine Company, East Liverpool, Ohio, has announced a line of process kettles which are equipped with the new Patterson *Flasheat* electric heating elements. The kettles are built in plain and stainless steel, as well as in a

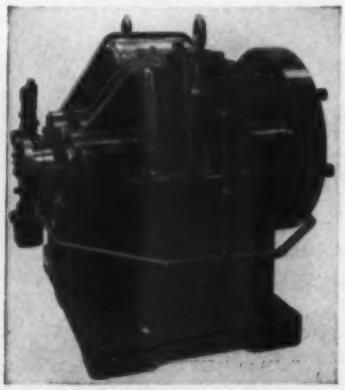


variety of non-ferrous metals. They are available in a wide range of sizes and are fitted with various types of mixing apparatus.

Among the claims made by the manufacturer for these kettles are: more rapid heatup, more heat concentration per unit area, and longer life.

Speed Increasers

A new line of speed increasers for operating centrifugal pumps, blowers, and compressors has been announced by the Westinghouse Electric & Manufacturing Com-



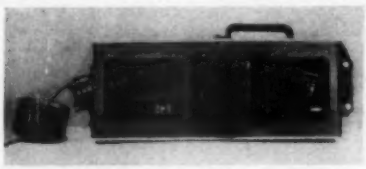
pany, East Pittsburgh. Standard gear ratios of these units vary from 2 to 1 to 12 to 1; and units are available in ratings from 1 horsepower per 1000 r.p.m. of the high speed shaft to more than 1800 horsepower per 1000 r.p.m. Units can be supplied for either right or left-hand assembly. Lubrication is accomplished by a self-contained circulating oil system. Gears are spray lubricated at line of contact. All bearings are under pressure lubrication. Frames are split horizontally; and each unit has a removable inspection plate. The average efficiency of these units, according to the manufacturer, is better than 96 per cent.

Water Soluble Methyl Cellulose

A water soluble methyl cellulose, designated as *Methocel*, has been announced by The Dow Chemical Company, Midland, Michigan. Coatings manufactured from this material are colorless, tasteless, transparent, and stable to heat and light. The material is suggested by the manufacturer for application to paper coating and sizing.

An Improved Glossmeter

Bausch & Lomb Optical Company, Rochester, New York, has announced an improved design of its *Glossmeter*. Among the features introduced in the new design are: a small aperture to concentrate the light; a new straight coil micro lamp; an



improved rheostat; and a lamphouse which makes the bulb easy to change and calibrate. The aperture is effectively filled by the lamp. The lamp is replaced and calibrated, when necessary, by means of knurled screws. Removal of a sheet metal cover of lamp house exposes socket and centering screws on the lamp base. The improved rheostat has been employed to avoid jumpy readings while knobs are being turned.

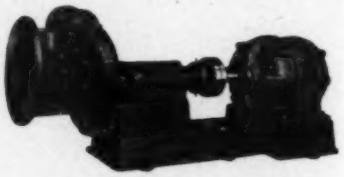
A new photoelectric cell of the electrocell type gives about three times greater output than that previously employed.

Ball Bearings with Oil-Impregnated Bronze Retainers

For specialized applications, the Fafnir Bearing Company, New Britain, Connecticut, has announced a line of ball bearings incorporating retainers made of oil-impregnated bronze. These retainers feed the oil at a speed for proper lubrication, but not sufficiently fast to cause leakage. The manufacturer suggests these bearings for applications that are inaccessible or subject to sub-zero temperatures.

Stock Pump

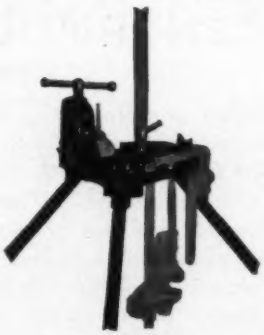
A non-binding, heavy-duty centrifugal stock pump, designated as the *"ST-P,"* has been developed by Morris Machine Works, Baldwinsville, New York. This pump has an unusually large suction nozzle for its capacity, and is provided with an enclosed parallel shrouded impeller with external wiping vanes on both surfaces. A propelling device, known as a suction booster, can be installed in the suction nozzle to prevent dehydration of extremely high consistency stock. The suction shroud of the impeller is designed to create a hydraulic seal to prevent internal leakage from the pressure passages to the suction. There is a vent in the highest part of the suction noz-



zle; and the top discharge nozzle is horizontal. The pump casting is diagonally split and is equipped with a large suction hand hole. The bearings have special provision for convenient shaft adjustment. The pump, built in 3, 4, 5 and 6-in. sizes, has been tested on stock in excess of 6 per cent consistency. Depending on size, it will handle from 15 to 250 tons of stock per day at moderately low operating speed.

Pipe Vise

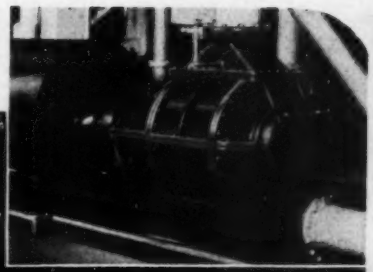
A pipe vise, designated as the Tri-Stand because of its three-legged base, has been announced by The Ridge Tool Company, Elyria, Ohio. The legs of the vise are hinged at the tray. They fold together compactly and fasten with a chain for handling and carrying. They also are equipped



for screwing to plank or floor, if desired. The tray is wide and roomy. There is a pipe rest; three different size pipe benders; and an adjustable screw for ceiling brace to hold vise rigid while in use. The vise is available in 2½ in. yoke and 4 in. chain patterns.

Tool Post Grinder

R. G. Smith Tool & Manufacturing Company, 245 South Street, Newark, N. J., has announced a tool post grinder, the design and construction of which, it is claimed, adapt it to a limitless range of uses on lathes, milling machines, shapers, planers, etc., and to an equally



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Fast, smooth, positive action is certain with Wright's precision load wheel bearings. The load chain, regardless of position, cannot ride out of the pocket because the Wright safety guard makes this impossible. Full zinc coating prevents corrosion.

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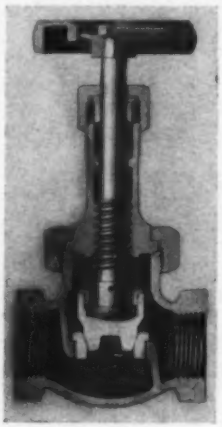
limitless range of bench work. Mounted on a spherical radius adapter, the grinder is adjustable in every direction. Eight speeds are obtainable by switching pulley and sheave. Standard surface grinder wheels fit the spindle. For certain jobs, the wheel can be placed on the drive end of the spindle. A wick felt keeps the spindle lubricated, one oil hole caring for the entire spindle.

New Line of Valves

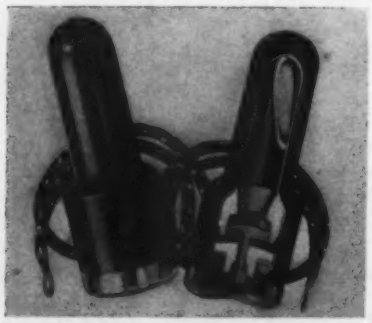
The Kennedy Valve Manufacturing Company, Elmira, New York, has announced a new line of bronze globe and angle valves with plug type discs and renewable seat rings for close control in throttling service and for general heavy duty. These valves are made in sizes from ¼ in. to 2 in.



for 200-lb. steam at 550 deg. Fahr. and 400 lb. cold water, oil or gas, non-shock; and in sizes from ¼ in. to 3 in. for 300-lb. steam at 550 deg. Fahr. and 600 lb. cold water, oil or gas, non-shock. Copper-nickel alloys are used for the discs and seat rings; a harder composition being used for the seat rings than for the discs.

Metal Mercury Switch

Durakool, Inc., Elkhart, Indiana, has announced a silent, unbreakable and noninflammable mercury switch. This switch, available up to 200-ampere capacity (larger on special order) operates on small tilt with



little energy. The manufacturer states that the switch, due to its steel shell enclosure, appears to offer absolute safety in any explosive atmosphere; and, in addition, with a rubber covering may be used even under water or other liquid.

Reference Standards For pH Apparatus

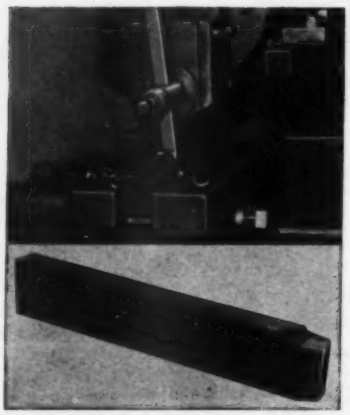
A new series of reference standards, known as *Hydrion Buffer Capsules,* for checking electrometric pH apparatus has been announced by R. P. Cargille, 118 Liberty Street, New York, Distributor. These standards, made by Micro Essential Laboratory, Brooklyn, N. Y., are in the form of powder, standardized and packaged in capsules.

Glass Electrode pH Instrument

Wilkens-Anderson Company, 111 North Canal Street, Chicago, as distributor, has announced a portable, glass electrode pH instrument. This instrument, designated as the *Cameron One-Two pH Tester,* is battery operated. The scale of the instrument reads directly over the range of 1-11 pH. The distributor suggests the use of the instrument in plant or laboratory where reading accuracy may be a tenth pH unit.

Shaper Tools

McKenna Metals Company, 226 Lloyd Avenue, Latrobe, Pa., has announced the development of standard steel-cutting shaper tools tipped with *Kennametal* grade KS. A feature of these new tools is the tool angles employed, namely: 10 deg. negative back rake, 15 deg. side cutting edge angle



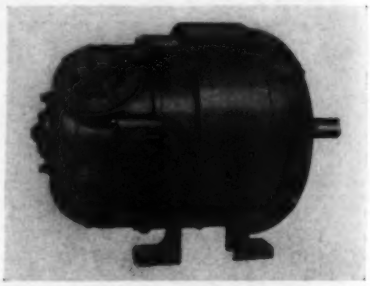
and 2 deg. clearances. These tools are furnished in sizes to fit standard clapper boxes of shapers and planers, and, according to the manufacturer, they will shape steel of hardness above the machinable limit for high speed steel tools at speeds that are often double those used with high speed steel tools on work in the lower hardness ranges.

Large Size Fittings

The American Brass Company, Waterbury, Conn., has announced a new line of fabricated and welded fittings as a supplement to its line of Anaconda brass, copper pipe, copper tubes, and solder fittings. The new fittings, available in either copper or Everdur metal, range in size from 8 in. to 24 in., and are available in the form of 45 deg. and 90 deg. elbows, reducers, straight tees, reduction-on-run tees, reduction-on-branch tees, crosses, laterals, flanges, and special fittings to specification. They are adaptable to large diameter, seamless cold drawn, welded or riveted and brazed carrying lines.

Explosion-Proof D-C. Motors

Reliance Electric & Engineering Company, Cleveland, has developed a line of explosion-proof d-c. motors, ranging in size from 1 hp. to 75 hp. These motors, tested



and approved by the Underwriters Laboratories for Class 1 Group D hazardous locations, are designed to operate safely in places made dangerous by the presence of gases and vapors.

Non-Warping Paste

Paisley Products, Inc., 1770 Canalport Avenue, Chicago, Ill., has announced a paste which, according to claims, will adhere all grades of paper stock to chip and binder board without wrinkling or warping. The lay-flat nature and adhesive strength of this new paste, according to the manufacturer, has created interest among converters of paper and paperboard products.

Torque Indicating Wrench

A wrench with indicator which registers the applied torque in inch-pounds has been developed by the Cedar Rapids Engineering Company of Delaware, Cedar Rapids, Iowa. The wrench, designated as the *Kwik-Way* torque indicating wrench, is made in three sizes, No. 0, No. 1, and No. 2, the first having a capacity from 0 to 500 inch-pounds; the second, from 0 to 1600 inch-pounds; and the third, from 0 to 3500 inch-pounds. All three sizes have a double ratchet which per-

mits operation of the individual wrench in both directions. In addition, the No. 1 and No. 2 wrenches individually have a lock which permits them to be converted into solid type wrenches. Chrome molybdenum alloy aircraft steel tubing is used for the wrench handle.

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▶▶▶ BOWATER'S NEWFOUNDLAND PULP AND PAPER CO., LTD., has floated an issue of $2,500,000 first mortgage 5 per cent bonds, the proceeds of which will be used to finance extensions to the company's existing sulphite mill.

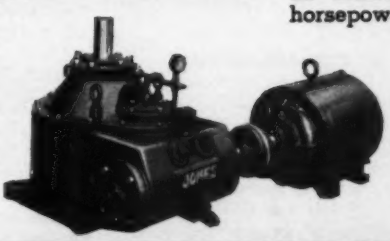
For driving agitators, mixers and similar equipment—

JONES WORM-HELICAL SPEED REDUCERS

HERE is a line of machines that fills a long felt need for double reduction units of the fully enclosed type to be used for agitators, mixers, etc. requiring a vertical shaft drive.

Many of these Jones units have established excellent performance records in a wide variety of service. As a result of that experience a complete standard line has been developed covering 15 standard ratios ranging from 40 to 1 to 250 to 1 for all common motor speeds and a wide range of horsepower ratings.

• This Jones Worm-Helical Speed Reducer on a lacquer agitator is typical of the wide range of services for which these drives can be used such as ore roasters, pulp tank mixers, furnaces, bending rolls and similar applications.



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TECHNICAL DEVELOPMENTS

The following abstracts are of the latest developments found in the foreign press.

Effects of Dryer Section on Paper Strength

Earlier studies dealing exclusively with the influence of the wet end of the paper machine are reviewed. The effects of the dryer section were studied. In the press rolls, the moisture content and breaking length approach constant values, and folding endurance increases. If the stretching or pressure are too high, the increase in strength properties may be counteracted. After leaving the presses, the sheet (having a dry content of 25-40 per cent) is taken up by the dryer felt and brought into contact with the heated surfaces of the drying cylinders. The author divides the dryer section into three parts: (1) in which the paper web is gradually heated to a higher temperature; (2) in which the evaporation zone occurs, and where the sheet reaches a dry content of 89-90 per cent; and (3) the final zone in which the so-called bound water is driven off until the sheet, leaving the last cylinder has a "dry content" of 90-97 per cent. The changes undergone by the sheet from the couch roll to the last drying cylinder, changes which are due to moisture decrease, shrinkage, stretch, and change of fiber orientation exert influences on the paper strength, both in the machine and cross direction. The orientating study showed the variations of different papers in the three zones listed above. The original article gives the results diagrammatically. B. P. Lindman. Papir-J. 27. No. 16, 246-52 (1939), through Bull. Inst. Paper Chem. 10, 82 (1939).

Plastics in Papermaking

The author describes typical thermoplastics and also the more important thermosetting materials. Laminated sheets have base materials of paper or cloth. The phenol- or cresol-formaldehyde products are the most in demand, because of their strength, stability and machinability. The sheets are stacked to the required thickness, and pressed in heated hydraulic presses. A brief description is also given for making laminated sheet tubes, rods, etc. Fibrous material has a much higher strength than has material containing wood meal fillers. The papermaker is interested in plastics from three viewpoints: (1) as an engineering material for his plant; (2) for producing paper novelties; (3) as a supplier of pulp to the plastics manufacturer. In general the paper base materials are somewhat stronger than fabric base resinoid materials, but also are less flexible. Liquors ordinarily used in papermaking do not greatly affect the phenol resinoids (except where strong parchmentizing acids are used). In the paper mill, resinoid products include gear wheels, suction-box-tops, bearings, doctor blades, table tops, roll center tubes, etc. These various parts, their advantages and in a few instances disadvantages are discussed. Their properties are compared with those of metals. While the resinoid material has no advantage over metal when both are oil-lubricated its average coefficient of friction is much lower than that of metal, when water lubrication is used. H. W. Rowell. Paper-Maker and British Paper Trade. J. 98. No. 2 (TS) 101-107 (1939).

Phosphoric Acid Viscosity of Cellulose

An example of Ekenstam's improved method is the following: 0.0691 finely divided pulp is stirred at 500-525 rpm. for 1 hr. with 20.07 cc. of saturating acid 73.2g/100g in a 100 cc. beaker kept at 20 deg. C. Thereupon 29.93 cc. of the dispersing acid (18.12g/100g) are added amidst stirring. After one-half hour the first 5 cc. sample is removed for viscosity determinations. At frequent intervals, other samples are removed until a maximum in the viscosity curve is reached. Stirring is very important, since unless agitation is vigorous no viscosity maximum is obtained. If, however, the stirring is too violent, introduced air bubbles hinder viscosity determinations. The saturating acid, it is claimed, gives a compound with the hydrated cellulose ($C_6H_{10}O_5.2H_2O$. H_3PO_4)n. This dissolves in the dispersing acid, the exact concentration of which depends on the "molecular weight" of the cellulose (degree of polymerization?). The method gives reproducible results, and is not influenced by the presence of air or light. The characteristic curve for any cellulosic sample is due: (1) to the time required for complete solution leading to maximum viscosity and (2) to the hydrolytic effect of the acid. The maximum viscosity is largely dependent on cellulose concentration. The greater the concentration, the more steeply the viscosity curve rises to a maximum, and the more quickly it drops away after that point is reached. A concentration of 0.9-1.4gl is recommended for technical evaluation of pulps. S. Schmidt-Nielsen and A. Markestad. Kgl. Norske Videnskab. Selkabs. Forh. 11, 82-5, through C. A. 33, 5175-7 (1939).

Cigarette Paper

The tolerances allowed by converters in this paper with regard to basis weight, opacity, porosity, density, ash, and strength are very limited. Each step in the manufacture has to be controlled very accurately, and skilled and experienced labor are required. The paper is made almost entirely from linen or hemp rags, with a basis weight of 18-21g per sq. m. The paper is normally either transparent or opaque,

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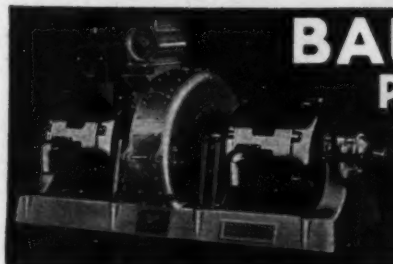

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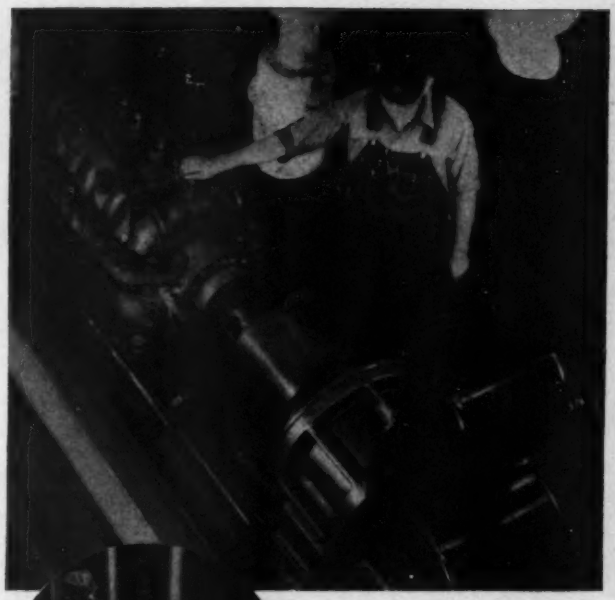

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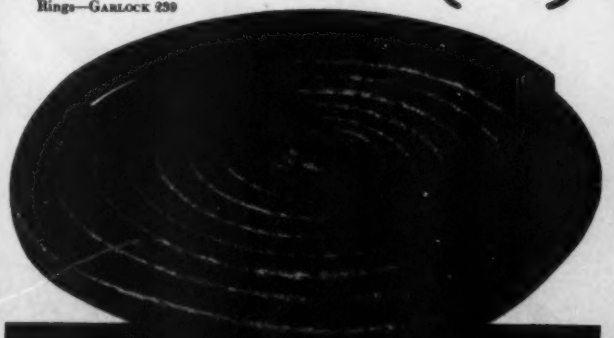

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with wove or laid finish, and with or without watermarks. In 1938 French production was 15,000 tons, and, in this, 18,000 tons of rag pulp were used. France (in 1938) supplied about 50 per cent of the world consumption. M. Braunstein. Papier 42, No. 8, 677-80 (1939) through Bull. Inst. Paper Chem. 10, 95 (1939).

Pulp Making Experiments With Mangrove Wood

The Imperial Institute undertook tests with different species of Tanganyika mangrove woods, of which very large quantities are available. The results were disappointing. Only alkaline cooking can be used, and easy bleaching pulp is not obtained. The fibers are short and can only be used as fillers. Anon. Bull. Imp. Inst. 37. No. 3, 331-44 (1939) thru Bull. Inst. Paper Chem. 10, No. 4. 131 (1939).

Alpha Cellulose

In Papier-Fabr. 36. (Tech-Wiss Tl.) 36, 497-508 (1938), W. Kumichel published the results of fractionation of cellulose in cuprammonium hydroxide (cf. The Paper Industry and Paper World, Feb. 1939, 1186). The present author, after making reference to the unreliability of chemical methods used in analyzing pulps used for rayon (especially the alpha cellulose determination coupled with so-called beta and gamma cellulose), refers to his experiments of 1934 which were discontinued and never published. They cover somewhat the same ground studied by Kumichel. Both authors find a cellulose number approximating a combination of alpha and at least a part of the "beta" cellulose. This article indicates that the procedures vary somewhat from those of Kumichel. The method provides for fractionation of cellulose in cuprammonium, conversion into nitrocellulose compounds (subsequently regenerated) and this combined with a determination of the degree of polymerization of the fractions. Further experiments, it is hoped, are in progress. Paul L. Bjornstad. Papir J. 27, No. 16, 258-62 (1939), through Bull. Inst. Paper Chem. 10, 788-9 (1939).

The Bjorkman Numbers of Bleached Pulps

For this method of determining the degree of pulping cf. Schwalbe-Sieber "Chemische Betriebskontrolle in der Zellstoff— und Papier-Industrie" pp. 315-8. The present authors find that Björkman's technic is practically unaffected by resin in the cellulose, but varies with the degree of delignification. In satisfactory viscose pulps the Björkman number varies from 5.8-9.8. Above this point (10-12) difficulties were found in converting the pulp into viscose. There is no direct factor for conversion of per cent lignin into the B. number. O. P. Golova and A. A. Metsler. Bumazhnaya Prom. 17, 24-6 (1939) through C. A. 34, 259 (1940).

Artificial Resins In Water Purification

A brief descriptive article showing how acid (Bakelite) resins are used and also how basic resins find a utilization as filters in purifying industrial waters. The latter are known as "aminoplastics." Regeneration of such filters is relatively simple and very inexpensive. NaCl solutions (70 g NaCl per cubic meter of water) serve to reactivate them and to displace the calcium and magnesium salts taken up by the resins. The salt content of a water may be decreased to 10 mg per liter by active resin masses, and the costs are at a minimum. This is the first time (with the exception of electrodialysis) that water can be freed from mineral matter by the use of two special filters. These lead (1) to the removal of hardness and (2) to removal of most of the soluble salts—approaching a distilled water. No details are given in the article. Anon. Wochenbl. Papierfabr. 70, No. 47, 905 (1939).

Fiber Strength During Stock Preparation

The so-called Shlick fiber strength test is discussed (although no details are given regarding apparatus and procedure). Presumably it comprises a fractionation apparatus requiring six minutes for each test, including a rapid consistency determination. The longer fibers are extracted in preference to the shorter ones, and this separation predicts more accurately (than does freeness?) the behavior of the strength-imparting longer fibers on the paper machine wire. The Shlick number thus characterizes the optimum average fiber length, which forms the basis for profitable machine operation and sheet properties. Leo Shlick. Proc. Tech. Sect. Papermakers Ass'n Gt. Britain & Ireland, 19, 321-46 (1939) through C. A. 33, 8011 (1939).

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PAPERMAKING PATENTS

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Manufacture of Calcium Sulphite Filled Paper

Patent No. 2,154,996. Francis G. Rawling, Piedmont, W. Va., assignor to West Virginia Pulp & Paper Company, New York, N. Y., a corporation of Delaware. Application June 24, 1938, Serial No. 215,587. 11 Claims. (Cl. 92—21). The treatment of paper pulp containing calcium sulphite as a filler, comprising the step of beating said pulp in the presence of water and a reducing agent in an amount effective for retarding oxidation of calcium sulphite to calcium sulphate in order to inhibit foaming.

Coating Device for Wet Paper

Patent No. 2,157,213. William M. Nash, Chicago, Ill., assignor, by direct and mesne assignments of one-fourth to Roy A. Nash, New Rochelle, N. Y., one-fourth to Mary Jones, Neenah, Wis., and one-fourth to Marie Duvall Nash, Neenah, Wis. Application July 2, 1936, Serial No. 88,551. 4 Claims. (Cl. 92—40). In combination with a paper making machine wherein a relatively wet newly formed web is continuously carried forwardly upon a paper forming wire, means for coating a surface of said web comprising, a dandy roll supported above the path of travel of the web, the surface of said roll being in contact with said web, means for discharging coating material onto the surface of said roll whereby the same is deposited by said roll upon the surface of the web, said means comprising a flexible apron positioned above said roll, said apron contacting the roll along a substantially tangential plane adjacent the top of the roll, and means for distributing a mobile coating material upon said apron, and a trough disposed within the roll and coextensive with the length theerof for retrieving coating material which passes through the surface of the roll.

Felt

Patent No. 2,157,082. Tom Milnes, Lachute Mills, Quebec, Canada, assignor to Ayers Limited, Lachute Mills, Quebec, Canada. Application April 16, 1937, Serial No. 137,309. 1 Claim. (Cl. 139—408). A three-ply asbestos dryer felt in which the weft of each ply is composed of yarns comprising a textile core, an asbestos-fibre envelope completely enclosing said core and an outer binding of textile threads spiralled around the asbestos envelope, said felt being further characterized in that the warp of the upper ply is composed entirely of core-yarns comprising a core of textile fibres enclosed in an asbestos-fibre envelope while the warps of the central and bottom plies consist solely of textile fibres such as cotton.

Paper Making Apparatus

Patent No. 2,156,445. Burke M. Baxter, Detroit, Mich. Application June 3, 1936, Serial No. 83,238. 1 Claim. (Cl. 92—44). In a paper making machine, the combination of a wire, a nozzle elongated transversely of the wire for supplying pulp thereto, said nozzle being divided interiorly thereof into a plurality of contiguous passages, and valves individual to said passages for controlling the flow of pulp therethrough.

Method of Eliminating Foam and Froth from the Surfaces of Fluids and Semifluids

Patent No. 2,151,963. Erling Fladmark, Lawrence, Mass. Application November 12, 1934, Serial No. 752,692. 6 Claims. (Cl. 91—68). In paper making the method of defoaming a moving web of paper having a fluid coating film applied thereto which consists in utilizing the movement of said web to distribute a defoamer agent directly upon the surface of said film.

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New Catalogues and Publications

Abbe Engineering Co., New York, N. Y.—Two new catalogues have been issued recently by this company. Pebble and ball mills for pulverizing, grinding and mixing are described and illustrated in one catalogue (49) and jar mills for pulverizing, grinding, dispersing, mixing, compounding, blending and extracting are to be seen in the other catalogue (47). Both releases are well illustrated and contain pertinent information as to the usages and features of the products.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.—Several new releases have been put out lately by this company. An interesting, 34-page bulletin, punched for loose-leaf filing, has to do with the company's "SS Unit" pumps which, the bulletin says, are "small in size, low in cost and versatile in application." This bulletin contains numerous photographs and drawings, in addition to head capacity tables and dimensional data relative to the product. Bulletin B6023 contains much interesting information about the company's oil circuit breakers, while Bulletin B6049 describes a new low current electronic welder for precision work.

Beaver Pipe Tools, Inc., Warren, Ohio—A well illustrated and very informative catalogue describing and illustrating this company's pipe threaders and cutters has been issued lately. The catalogue, 24 pages in length, would be a very valuable piece of literature to any one engaged in cutting and threading pipe or bolts.

just recently issued. The 64-page booklet is a ready reference for men responsible for the maintenance of industrial buildings and structures. It illustrates types of floor construction and correction of common difficulties and explains in detail, with photographs and reading matter, the applications of the company's surfacing materials. This booklet should be on file in every engineer's office.

B. F. Goodrich Co., Akron, Ohio—A four-page catalogue section on its line of Acidseal paints, derived from rubber, has just been published by this company and is now available. The subject is interesting to the paper field because of the paints properties as coverings for paper mill interiors for protection against humidity and fumes, particularly in the vicinity of pulp bleaching operations.

Lunkenheimer Co., Cincinnati, Ohio—This company's complete line of "King-Clip" valves with drain channels and bronze thread bushings in bonnet, is illustrated in a new 8-page circular (504-RL) recently put out. Price lists and specification data are included in this informative release.

McKenna Metals Co., Latrobe, Pa.—Cutting speed conversion tables, printed on heavy paper, and which show the revolutions per minute required for turning bar stock at surface speeds of 90 to 550 feet per minute with Kennametal steel-cutting carbide tools, have just been made available by this com-

Companies whose literature is announced on this page will be pleased to forward copies to anyone requesting same on company letterhead. When writing for these publications please mention THE PAPER INDUSTRY and PAPER WORLD.

Cameron Machine Co., Brooklyn, N. Y.—High speed winder or rewinder for paper and board mills (Camachine 14) is the subject of a new bulletin (No. 14-438) recently issued by this company. All specifications are given.

Celotex Corp., Chicago, Ill.—A new 72-page handbook on gypsum plaster entitled the "Ounce and the Pound" has just been published by this company. The booklet answers all the common questions that arise in connection with plaster and plastering and thoroughly covers the subject of gypsum from mine to the finished plaster wall. This booklet is a valuable guide and an excellent reference handbook.

Chicago Belting Co., Chicago, Ill.—Of distinct value to any company using packings is the new handbook on hydraulic and pneumatic leather packings recently published by this company. The fifty-page, spiral bound book contains information much needed by the field and includes extensive data on hydraulic packing design and the component parts, all of which is illustrated by means of detailed drawings. Complete specifications and standard list prices are included. This very valuable publication is free to heads of engineering departments and designing engineers only in industrial plants using packings either for replacement or standard equipment.

Cochrane Corp., Philadelphia, Pa.—This company's Bulletin 2925 brings up to date the complete design, construction and price data on the Cochrane drainer. The bulletin contains cut-away diagrams of the working parts of the drainer and explains its uses in power plants, paper mills, textile plants and food and process plants. The bulletin is punched for loose-leaf filing.

Flexrock Co., Philadelphia, Pa.—Those engaged in maintenance work will want to see a copy of this company's new "Hand Book of Building Maintenance"

pany. These tables are useful to time study men, as well as tool designers and machinists, as they permit quick determination of the nearest spindle speed to the best cutting speed when using Kennametal for turning various diameters of work. The formula for determining the correct horsepower to prevent stalling of machines is set forth at the beginning of the tables.

Permutit Co., New York, N. Y.—An interesting bulletin (2279) on this company's master pilot valve for controlling cyclic process operations has been issued recently.

Peerless Pump Division, Food Machinery Corp., Los Angeles, Cal.—An interesting bulletin entitled "100,000 Raindrops from Underground for 1c" illustrates this company's types of deep well pumps. Both the oil-lubricated and water-lubricated types are shown and explained both as to features and applications. The company's "Hi-Lift" pump is also described. In addition to this bulletin a release covering the complete line may also be had from this concern.

Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa.—Volume 1, Number 1, of the Westinghouse "Quick Selector" catalogue has just been issued. The 60-page booklet contains specification data and price lists for the company's safety switches, "Nofuze" breakers, multi-breakers, panel boards, motor controls and motors. Photographs of the equipment used throughout. The booklet is designed to aid the reader to select the right piece of electrical apparatus quickly.

Whiting Corp., Harvey, Ill.—A sectional crane catalogue, made up of a series of individual pieces of literature, has been issued lately by this company. The catalogue, replete with photographs, drawings and cross-sectional views, gives a very complete story of the various types of cranes manufactured by

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this company. The advantage of this catalogue is that new sheets may be added when received and old sheets thrown away. Described in this new release are crane speed ranges, tiger trolleys, crane bridges, double bridge drives, bridge trucks, travel brakes, blocks and hooks, couplings, gantry cranes and many other units.

BOOKS

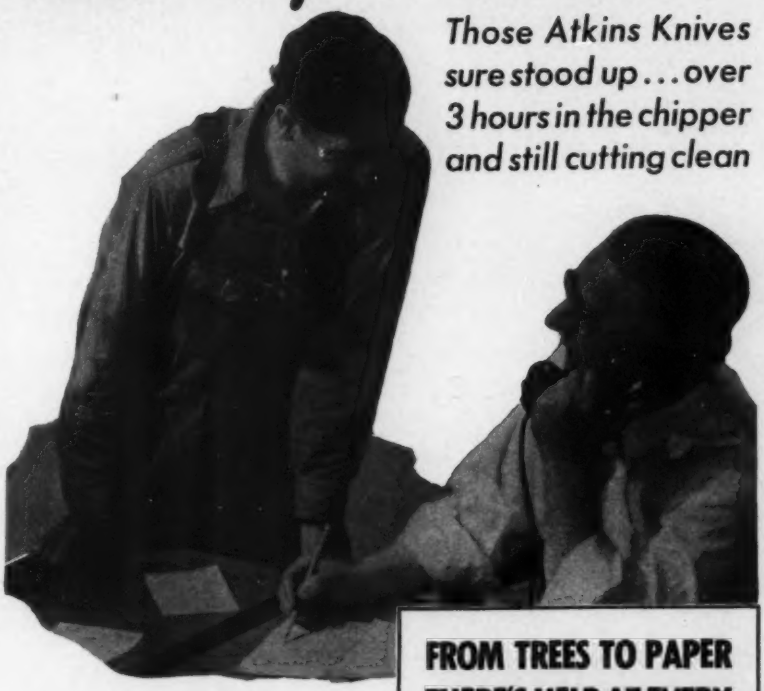
Lockwood's Directory of the Paper and Allied Trades—The 1940 edition of this volume contains 1256 pages with a similar breakdown of the paper and pulp industry and allied trades as the 1939 edition. Numerous changes are noted in the names of companies, grades of paper, etc., and the list of idle mills is considerably less than in recent years. There have been many changes and additions in all sections of the directory. The directory is issued in two editions: the regular edition and the travelers' edition. The latter includes about 250 pages and contains only the pulp and paper mill section. Either volume may be procured from the Lockwood Trade Journal Co., Inc., New York city. Price for either edition is $7.50 or $7.00 cash with order.

National Directory of the Canadian Pulp and Paper Industries (1940)—The 1940 edition of this well-known directory of the Canadian pulp and paper industries, founded in 1907, has made its appearance. . It records the latest available statistics pertinent to the scope of the volume; includes information on the manufacturers and distributors of pulp, paper and board, and on converters; and brings important personnel listings of different mills up to date. There also is a list of Canadian Trade Commissioners, as well as a list of pulp, paper, and allied organizations of the Dominion. Published by National Business Publications, Limited, Gardenvale, Quebec, the editor-in-chief of the volume was J. N. Stephenson; the compiler, J. M. Gilman.

Folding Paper Boxes, An Aid to Profitable Packaging—This Department of Commerce release is designed to answer questions of one type or another covering the folding paper box. Sixty pages in length, this booklet does a thorough job of explaining the use of paperboard for folding boxes and there is much information on the principal kinds of folding boxboards, special treatments for folding boxboard while in the sheet, paper box production, principal styles, products packaged, new uses, and the status of the industry. Extensive reading references are included. This booklet was prepared under the general supervision of P. A. Hayward, chief of the Forest Products Division. It may be procured from the Superintendent of Documents, Washington, D. C. Price is fifteen cents.

The Manufacture of Paperboard—This publication, written by Norbert G. Rennicke, is a volume of nearly 50 pages, 8½ in. by 11 in. The material contained in the work first appeared serially in *Fibre Containers* during 1938-1939. It covers such important subjects as grades of paperboard, furnishes, raw materials, manufacture of paperboard on cylinder machines, kraft board, strawboard, chestnut board, and testing paperboard. All of the material is well illustrated and is attractively bound in a durable paper cover. Published by Board Products Publishing Company, 228 North La Salle Street, Chicago, the work should prove of interest to any papermaker and particularly to any papermaker associated with the paperboard industry. It is priced by the publisher at $1.25 a copy for domestic sale, $1.50 a copy for foreign sale.

Your Hunch Was Right, Boss!



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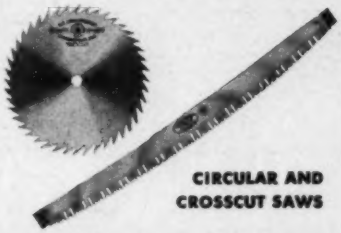

CIRCULAR AND CROSSCUT SAWS

CHIPPER KNIVES

PAPER SLITTERS, KNIVES AND SHEARS

CURRENT MARKET QUOTATIONS

RAGS (Domestic)
f. o. b. New York City

NEW RAGS	per cwt.
Blue Overalls	5.00 to 5.25
Corduroy	2.75 to 3.00
Cottons—	
Washables, No. 1	2.00 to 2.25
Fancy Percales	3.25 to 3.50
New Soft Blacks	3.75 to 4.00
New Light Seconds	1.75 to 2.00
New Dark Seconds	1.60 to 1.75
Khaki Cuttings—	
Mixed	3.00 to 3.25
O. D.	3.50 to 3.75
New Canvas	3.00 to 3.25
New Mixed Blacks	2.50 to 2.75
Shirt Cuttings—	
New White No. 1	7.50 to 7.75
Silesias No. 1	4.75 to 5.00
New Unbleached	7.50 to 7.75
Fancy	2.25 to 2.50

RAGS (Domestic)
f. o. b. New York City

OLD RAGS	per cwt.
Roofing—	
No. 1	1.45 to 1.50
No. 2	1.25 to 1.30
No. 3	1.15 to 1.20
Twos and Blues—	
Repacked	2.00 to 2.25
Thirds and Blues—	
Repacked	1.80 to 2.00
Miscellaneous	1.65 to 1.75
White, No. 1—	
Repacked	3.00 to 3.25
Miscellaneous	2.75 to 3.00
White, No. 2—	
Repacked	2.50 to 2.75
Miscellaneous	2.00 to 2.25

RAGS (Foreign)
ex dock New York City

NEW RAGS	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelette	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)
ex dock New York City

OLD RAGS	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shoppers	

ROPE and BAGGING
f. o. b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	2.50 to 2.75
Domestic	2.50 to 2.75
Wool Tares—	
Light	2.35 to 2.50
Heavy	2.50 to 2.60
No. 1 Scrap Bagging	2.25 to 2.50
Manila Rope—	
Foreign	4.50 to 4.75
Domestic	4.50 to 4.75
New Burlap Cuttings	3.50 to 3.75
Jute Threads—	
Foreign	3.50 to 3.75
Domestic	3.25 to 3.50
Strings—	
Sisal	2.25 to 2.50
Soft jute	3.25 to 3.50
Mixed	1.00 to 1.25

WASTE PAPER
f. o. b. New York City

	per cwt.
Shavings—	
White Envp. Cuttings	2.85 to 3.10
Ord. Hard White No. 1	2.35 to 2.60
Ord. Soft White No. 1	2.10 to 2.35
Soft White, Extra	2.50 to 2.65
Flat Stock—	
Stitchless	.95 to 1.00
Overissue Mags	.90 to .95
Solid Flat Book	.80 to .85
Crumpled No. 1	.65 to .70
Solid Ledger Books	1.75 to 1.90
Ledger Stock—	
White	1.50 to 1.65
Colored	1.05 to 1.15
New B. B. Chips	.35 to .40
Manilas—	
New Env. Cuts	1.90 to 2.00
New Cuttings	1.50 to 1.60
Sulphite Wrappers	.40 to .45
No. 1 Old Kraft	1.25 to 1.35
News—	
No. 1 Wh. News Cuttings	1.60 to 1.70
Strictly Overissue	.80 to .85
Strictly Folded	.50 to .55
No. 1 Mixed Paper	.27½ to .32½

CHEMICALS
f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt.	3.75 –
Ground, cwt.	3.50 –
Powdered, cwt.	3.90 –
Blanc Fixe—	
Pulp, bulk, ton	32.00 to 35.00
Dry, barrels, pound	.0250 to .0275
Bleaching Powder—	
Drums, cwt.	2.00 to 3.00
Casein (Domestic Standard)—	
20-30 mesh (bags), lb.	13.75 to 14.50
80-100 mesh (bags), lb.	15.50 to 16.00
Argentine, lb.	12.25 to 12.50
China Clay—	
Domestic Filler	
Bulk (mine) ton	7.50 to 15.00
Domestic Coating	
Bulk (mine) ton	11.00 to 32.00
Imported (ship side)	
Bulk (lump) ton	15.00 to 25.00
Chlorine—	
Tank cars (wks) cwt.	1.75 to 1.90
Gelatine (silicia), lb.	.53 to .55
Glye. (C.P.) drums, lb.	.1250 to .1300
Litharge, powd., bbl., lb.	.08 –
Rosin (Gum)—	
New York, 280 lb. barrel	
E, per bbl.	6.45
F, per bbl.	6.55
G, per bbl.	6.75
WW, per bbl.	7.00
Rosin (Wood), per bbl., carlots	4.00 to 6.70
Salt Cake—	
Dom. bulk (wks) ton	16.00 to 17.00
Imp. bulk on dock—	
(Atl. ports) ton	20.00 to
Soda Ash—	
Bulk (works) cwt.	.90 to .95
Paper Bags, cwt.	1.05 to 1.35
Barrels, cwt.	1.05 to 1.35
Soda (Caustic)—Ammonia,	
Solid, drums, cwt.	2.30 –
Ground and flake, drums, cwt.	2.75 –
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1.65 to 2.00
40 deg., 35 gal. drums, (works) cwt.	.80 to 1.20
Starch—	
Pearl, 140 lb. bags, cwt.	2.45 –
Pearl, barrels, cwt.	2.70 –
Paper (Sp.) bags, cwt.	2.55 –
barrels, cwt.	2.80 –
Sulphur (crude)—	
(mine) bulk, long ton	16.00 to 20.50
Talc—	
Dom. 100 lb. bags (mine) ton	15.00 to 18.00
Imp. bulk, ton	23.00 to –
Titanium Dioxide—	
Barium Pig., bbls., lb.	.05¼ to .05½
Calcium Pig., bbls., lb.	.05¼ to .05½
Zinc Sulphide, bbls., lb.	.07½ to .07¾

CHEMICAL PULP
(Air-dry ton)

	per cwt.
Soda (Dom.) del'd. mill—	
Bleached	2.90 –
Sulphate (Dom.) f. o. b. mill—	
Bleached	3.50 to 3.75
Kraft No. 1	2.25 to 2.50
Kraft, Southern, del.	2.00 to 2.25
Sulphate (Imp.) on dock—	
Bleached	3.50 to 4.00
Kraft No. 1	2.50 to 2.75
Kraft No. 2	2.25 to 2.50
Sulphite (For.) On dock—	
Prime bleached	3.25 to 3.50
Prime easy bleach	3.00 to 3.25
Prime strong unbl.	2.75 to 3.00
Sulphite (Dom.)	
Bleached, contract	3.00 to
Unbleached, contract	2.50 to

MECHANICAL PULP
(Air-dry ton)

	per ton
No. 1 Dom. & Can. (f. o. b. mill)	30.00 to 33.00
No. 1 Imp. (On dock)—	
Moist	38.00 to 42.00
Dry	40.00 to 45.00

PAPER
f. o. b. New York City

	per ton
Boards—	
Binders	76.00 to 82.00
Chip	45.00 –
Chip, sgl. mla. lined	57.50 to 60.00
Coated, white patent .016	75.00 –
.020 and heavier	70.00 –
Kraft liner	55.00 –
News	45.00 –

	per cwt.
Book (eased)	
No. 1 Glossy Coat	11.90 to 13.50
No. 2 Glossy Coat	10.35 to 11.75
No. 3 Glossy Coat	9.55 to 11.00
No. 4 Glossy Coat	9.15 to 10.50
No. 2 Offset	7.70 to 9.00
A Grade M. F.	6.40 to 7.15
A Grade Super	6.65 to 7.40
B Grade M. F.	5.95 to 6.70
B Grade Super	6.20 to 6.95
B S. & S. C. Litho	6.45 to 7.20
B M. F. Litho	6.20 to 6.95
Ivory & India	.50 cwt. extra
Bonds (Rag Content)—	
100% Rag	
Ext. No. 1	39.10 to 46.00
100% Rag	31.05 to 36.50
85% Rag	
75% Rag	23.80 to 27.75
65% Rag	20.50 to 25.00
50% Rag	17.55 to 21.50
25% Rag	14.65 to 17.75
Regular Colors	1.00 cwt. extra
Bonds (Sulphite)—	
No. 1	8.95 to 11.00
No. 2	8.05 to 9.75
No. 3	7.60 to 9.25
No. 4	7.30 to 9.00
Colors	1.00 cwt. extra
Glassine (f. o. b. mill)—	
Embossed (25 lb. up)	12.75 –
Bleached (25 lb. up)	11.75 –
Unbleach. (25 lb. up)	10.50 –
Greaseproof—	
Bleach. (25 lb. up)	10.25 –
Unbleach. (25 lb. up)	9.25 –
Ledgers (Rag Content)—	
100% Rag	
Ext. No. 1	40.25 to 47.25
100% Rag	32.20 to 37.75
85% Rag	29.90 to 35.00
75% Rag	24.75 to 29.00
65% Rag	21.65 to 26.25
50% Rag	18.70 to 22.75
25% Rag	15.80 to 19.25
Regular Colors	1.00 cwt. extra
Ledgers (Sulphite)—	
No. 1	10.10 to 12.25
No. 2	9.25 to 11.25
No. 3	8.50 to 10.75
No. 4	8.50 to 10.25

	per ton
News—	
Rolls (Contract)	50.00 –
Rolls (Spot)	(nominal)
Sheets	58.00 –

	per ream
Tissues (Carlots)—	
White, No. 1	.92½ –
White, No. 2	.85 –
Anti-Tarnish M. G.	.80 –
Colored	.87½ –
Kraft	.80 –
Manila	.65 –
Napkins, semi-crepe (12½ lb. to M shts.) per cs.	.41 –
Napkins, full crepe and emb'ssed (12½ lb. to M shts.) per cs.	.43¼ –
Toilet, Bleached (M shts.) per cs.	5.80 –
Toilet, Unbleached (M shts.) per cs.	3.50 –

	per case
Towels—	
Bleached	3.10 to 3.65
Unbleached	1.95 to 3.30

	per cwt.
Wrappings (Kraft)—	
Extra Quality	5.00 to 5.50
Super-Standard	4.62½ to 5.00
Northern Standard	4.25 to 4.50
Southern Standard	4.00 to 4.25

Wrappings (Sulphite and Bleached Kraft)—
(Rolls, f. o. b. mill)

	per cwt.
Bleached papers—	
M.F. & M.G. Waxing, 30 lb. (Carloads only)	6.15 –
(10,000 lbs.)	6.40 –
Drug wrapp. 35 lb.	6.25 –
Unbleached Papers—	
Com. Grd. Butch. 40 lb.	4.50 –
No. 1 Butchers	4.75 –
No. 1 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	5.00 –
No. 2 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	4.75 –
Steam Finish, 50 lb.	4.00 –
Water Finish, 40 lb.	4.50 –
Manilas—	
Envp. Mla., Sub. 16-40 (No. 1)	5.00 –
Envp. Mla., Sub. 16-28 (No. 2)	4.75 –
Envp. Mla. (Prices based on large sheets untrim'd ream-marked, in bdls.)	
Wrapp. Mla. 35 lb. up—	
No. 1	5.25 –
No. 2	5.00 –
M. G. Sulphite and Kraft (other than Waxing)	
Grade A-25 lb.	5.75 –
Grade B-25 lb.	5.25 –